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FINAL SITE MANAGEMENT PLAN FISCAL YEAR 2020 MCB QUANTICO VA

11/01/2019
CH2M HILL

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Washington
Quantico, Virginia

Final

**Site Management Plan
Fiscal Year 2020**

Marine Corps Base Quantico
Quantico, Virginia

November 2019



Washington
Quantico, Virginia

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Prepared for NAVFAC Washington
by CH2M HILL, Inc.
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Executive Summary

This document presents the Fiscal Year 2020 Site Management Plan (SMP) for the Department of the Navy (Navy) Environmental Restoration Program (ERP) for Marine Corps Base Quantico (MCBQ) located in Quantico, Virginia. The SMP has been developed on behalf of Naval Facilities Engineering Command Washington as required within the 1999 Federal Facility Agreement for MCBQ¹. The SMP serves as a support document in planning, reviewing, and setting budget and schedule priorities for the ERP activities at MCBQ. The SMP is updated on an annual basis and provides a near-term snapshot of ERP activities.

The purpose of the ERP is to reduce the risk to human health and the environment from legacy waste disposal operations and hazardous substance spills at Navy facilities following the Comprehensive Environmental Response, Compensation, and Liability Act regulatory process. The ERP activities identified within this SMP fall into two program categories:

- Installation Restoration Program (IRP) – The IRP addresses releases of hazardous substances, pollutants, or contaminants that pose toxicological risks to human health or the environment.
- Munitions Response Program (MRP) – The MRP addresses potential hazards from the Navy's past use of military munitions. The MRP addresses environmental health and safety hazards associated with unexploded ordnance (UXO), discarded military munitions, and munitions constituents.

A total of 304 ERP sites have been identified at MCBQ. The distribution of these ERP sites based on current status (open, closed, or deferred to another regulatory program) and ERP program category (IRP or MRP) is presented below:

Category	Number of Sites	Explanation
Total ERP Sites	304	Number of ERP sites including IRP and MRP sites (open, closed, and deferred)
Total IRP Sites	262	Number of IRP sites (open, closed, and deferred)
Total MRP Sites	42	Number of MRP sites (open, closed, and deferred)
Total Inactive ERP Sites	278	Number of ERP sites including IRP and MRP sites that are closed or deferred to other programs
Total Inactive IRP Sites	255	Number of IRP sites that are closed or deferred to other programs
Total Inactive MRP Sites	23	Number of MRP sites that are closed or deferred to other programs
Total Closed ERP Sites	232	Number of ERP sites including IRP and MRP sites that are closed
Total Deferred ERP Sites	46	Number of ERP sites including IRP and MRP sites that are deferred to other programs
Total Open ERP Sites	26	Number of ERP sites including IRP and MRP sites that are open
Total Open IRP Sites	7	Number of IRP sites that are open
Total Open MRP Sites	19	Number of MRP sites that are open

The focus of this SMP will be on presenting the activities associated with the 26 open ERP sites consisting of the 7 IRP sites and 19 MRP sites. The open ERP sites consist of the following:

- Site 04 (Operable Unit [OU] 4) – Old Landfill, Defense Reutilization and Marketing Office (DRMO) Scrapyard, and Building 669
- Site 95 (OU 19) – Building 2101 Paint Booth Sump

¹ MCBQ was formerly identified as Marine Corps Combat Development Command Quantico within the Federal Facility Agreement (FFA). The effective date of the FFA is February 4, 1999, based on signature by the Navy and United States Environmental Protection Agency (EPA).

- Site 99 (OU 12) – Quantico Embayment
- Site 100 (OU 13) – Chopawamsic Creek
- Site 102 (OU 23) – Abraham’s Creek
- Site 104 (OU 21) – Building 2113 Underground Tank Loading/Unloading Area
- Site 105 (OU 38) – Soil Areas
- UXO 001 - Little Creek Skeet Range
- UXO 013A (OU 24) – 81-millimeter (mm) Mortar Range (Impact Area)
- UXO 013B (OU 30) – 81-mm Mortar Range (Firing Fan)
- UXO 013C – 81-mm Mortar Range (Firing Point K2)
- UXO 013D – 81-mm Mortar Range (Firing Point K3)
- UXO 018 (OU 37) – Marine Corps Flying Field Bombing Target No. 5
- UXO 019 (OU 31) – Grenade Field
- UXO 021 (OU 32) – Combat Area C Field Firing Range
- UXO 024 – Combat Area E Field Firing Range
- UXO 025 (OU 33) – Quantico Clubs
- UXO 026 (OU 34) – Chopawamsic Creek Skeet Range No. 1
- UXO 028 – Marine Corps Exchange
- UXO 033 (OU 29) – Federal Bureau of Investigation Training Area 8
- UXO 034 (OU 27) – Lunga Recreation Area South
- UXO 035 (OU 39) – Lunga Reservoir
- UXO 036 (OU 40) – Grenade Pit
- UXO 037 (OU 41) – Chopawamsic Creek Range Fans
- UXO 038 (OU 35) – Lunga Recreation Area Central
- UXO 039 (OU 36) – Lunga Recreation Area North

The locations of each of the open ERP sites are presented in **Figures ES-1** and **ES-2**: **Figure ES-1** identifies the site locations on the Mainside section of MCBQ (generally east of Interstate 95) and **Figure ES-2** identifies the site locations on the Guadalcanal section of MCBQ (generally west of Interstate 95). **Table ES-1** presents an overview of each of the open sites including: site identification and description; abbreviated site history; ERP program category (IRP or MRP); MCBQ section location (Mainside or Guadalcanal); current ERP phase; and the Fiscal Year 2020 goals as established by the Quantico Project Managers Team (QPMT) consisting of representatives from the Navy, MCBQ, United States Environmental Protection Agency, and the Virginia Department of Environmental Quality. The Maryland Department of Environment also is engaged through the QPMT for ERP site activities within the Potomac River.

Table ES-1. Environmental Restoration Program Open Sites Overview

Fiscal Year 2020 Site Management Plan

Marine Corps Base Quantico, Quantico, Virginia

Site Identification and Designation	Site Name	Operable Unit (OU)	Abbreviated Site History	ERP Program Category	MCBQ Section	Current ERP Phase	Fiscal Year 2020 Goals	Comments
Site 04	Old Landfill	04	24-acre old landfill operating from early 1920s through 1971. Landfill operations extended shoreline of Potomac River approximately 250 feet past original location	IRP	Mainside (Figure ES-1)	Long Term Management	None	Selected remedy consists of land use controls (LUCs), long term monitoring (LTM), and Five Year Review (FYR) reports related to the installation of an engineered cap installed in 1997. LTM efforts are ongoing.
	Defense Reutilization and Marketing Office (DRMO) Scrapyard		2.5-acre scrapyard located on top of the Old Landfill (L-02) constructed in the 1950s. Used for storage of polychlorinated biphenyl (PCB) containing transformers which reportedly leaked onto ground surface					
	Building 669		Former building (since removed) located on top of the northeast portion of the Old Landfill (L-02) next to DRMO Scrapyard (L-03). Several PCB and mineral oil transformers were stored in this building until 1979					
Site 95	Building 2101 Paint Booth Sump	19	Paint booth sump constructed in 1984 in the former paint shop of Building 2101. Washwater from the paint booth was drained from a spigot to the sanitary sewer system	IRP	Mainside (Figure ES-1)	Feasibility Study	None	Selected remedy is treatment of groundwater, LUCs, and site reviews. Although a Record of Decision (ROD) was previously completed for this site in 2008, an additional source area was identified in 2011. A Feasibility Study Addendum (completion in Summer 2020) and potentially a ROD Explanation of Significant Differences (completion in Spring 2022) are planned.
Site 99	Quantico Embayment	12	The embayment is approximately 190 acres located along the eastern shoreline of MCBQ within a semi-circular inlet of the Potomac River. PCB and pesticide contamination in soil and sediment is present within the embayment area	IRP	Mainside (Figure ES-1)	Long Term Management	None	Selected remedy consists of placement of a habitat enhancement cap, dredging and offsite disposal of contaminated sediment, and monitored natural recovery in addition to LUCs. LTM efforts are ongoing.
Site 100	Chopawamsic Creek	13	Representing the Chopawamsic Creek portion of the Quantico Watershed Study subdivided into four areas (1 through 4). Lead-contaminated sediment identified in Area No. 3; other areas agreed as no action	IRP	Mainside (Figure ES-1)	Long Term Management	None	Selected remedy for Area No. 3 consists of monitored natural recovery, LUCs, LTM, and FYR reports. Based on the results of the LTM, a ROD Explanation of Significant Differences (completion in early 2021) is planned.
Site 102	Abrahams Creek	23	Representing the Abrahams Creek portion of the Quantico Watershed Study. Pesticides have been detected at relatively high concentrations within the creek sediment	IRP	Mainside (Figure ES-1)	Feasibility Study	None	The Remedial Investigation and Feasibility Study for Site 102 were previously completed as part of Site 100. A Feasibility Study Addendum is anticipated (completion in late 2019).
Site 104	Building 2113 Underground Tank Loading/Unloading Area	21	Building 2113 is a heating plant for MCBQ; the underground tank loading/unloading area is located next to the building. Runoff and spills from this area were designed to drain into a sump. The heating plant operated from 1941 to 1986; currently the building is vacant and all tanks have been removed or closed in-place	IRP	Mainside (Figure ES-1)	Remedial Design	None	The selected remedy is in-situ enhanced bioremediation, monitoring, LUCs, and FYR reports. Petroleum investigation (completion in 2019) is required prior to Remedial Design.
Site 105	Soil Areas	38	Former location of Building 689, a pesticide control building, which was constructed in 1937 and destroyed in a fire in 1985. Approximately 500 pounds of pesticides and herbicides were stored in building prior to fire; runoff water from firefighting entered a nearby drainage channel	IRP	Mainside (Figure ES-1)	Remedial Investigation	None	A Remedial Investigation Report is planned (completion in Summer 2020) based on a supplemental investigation for petroleum contamination in soil.

Table ES-1. Environmental Restoration Program Open Sites Overview
Fiscal Year 2020 Site Management Plan
Marine Corps Base Quantico, Quantico, Virginia

Site Identification and Designation	Site Name	Operable Unit (OU)	Abbreviated Site History	ERP Program Category	MCBQ Section	Current ERP Phase	Fiscal Year 2020 Goals	Comments
UXO 001	Little Creek Skeet Range	None	Former shotgun shooting range at launched targets from 1937 through mid-1940s	MRP	Mainside (Figure ES-1)	Remedial Investigation	None	Evaluation of Supplemental Site Inspection Report completed in June 2015 to determine next steps. Remedial Investigation Work Plan is scheduled for completion in late 2019.
UXO 013A	81 mm Mortar Range (Impact Area)	24	Impact area for former 81 mm mortar and artillery ranges used between 1919 and 1943. Site area is 28 acres	MRP	Mainside (Figure ES-1)	Remedial Investigation	None	Remedial Investigation fieldwork is ongoing.
UXO 013B	81 mm Mortar Range (Firing Fans)	30	Firing fans for former 81 mm mortar and artillery ranges used between 1919 and 1943. Firing fans extend across the Chopawamsic Creek. Site area is 260 acres total, 40 acres terrestrial	MRP	Mainside (Figure ES-1)	Remedial Investigation	None	Remedial Investigation fieldwork is ongoing.
UXO 013C	81 mm Mortar Range (Firing Point K2)	None	Firing point (K2) for former 81 mm mortar and artillery ranges used between 1919 and 1943	MRP	Mainside (Figure ES-1)	Remedial Investigation	None	Remedial Investigation approach to be determined.
UXO 013D	81 mm Mortar Range (Firing Point K3)	None	Firing point (K3) for former 81 mm mortar and artillery ranges used between 1919 and 1943	MRP	Mainside (Figure ES-1)	Remedial Investigation	None	Remedial Investigation approach to be determined.
UXO 018	Marine Corps Flying Field Bombing Target No. 5	37	Former Marine Corps Flying Field Bombing Target Area; use ended in early 1940s	MRP	Mainside (Figure ES-1)	Remedial Investigation	None	Site Investigation Work Plan is planned for completion in 2020.
UXO 019	Grenade Field	31	Former grenade range used between 1917 and and 1942. Site area is 9 acres. Also referred to as the Grenade Course	MRP	Mainside (Figure ES-1)	Remedial Investigation	None	Remedial Investigation fieldwork is ongoing.
UXO 021	Combat Area C Field Firing Range.	32	Historical training area and likely impact area for mortar and light artillery. Site area is 285 acres. Former range use estimated from 1935 to 1943	MRP	Mainside (Figure ES-1)	Remedial Investigation	None	Remedial Investigation fieldwork is ongoing.
UXO 024	Combat Area E Field Firing Range	None	Training area where small arms and potentially larger munitions items may have been used. Estimated end of use of former range in 1943	MRP	Mainside (Figure ES-1)	Site Inspection	None	Closeout of comments with Marine Corps Systems Command to determine next steps; completion of Remedial Investigation at UXO 013A and 013B as input.
UXO 025	Quantico Clubs	33	Former range used multiple activities including: a rifle and pistol range; mortar and grenade firing activities; and mortar and white phosphorous disposal area. General timeframe of range use from 1926 to 1952. Site area is 35 acres	MRP	Mainside (Figure ES-1)	Remedial Investigation	None	Remedial Investigation fieldwork is ongoing.
UXO 026	Chopawamsic Creek Skeet Range No. 1	34	Former skeet range located along the north bank of the Chopawamsic Creek	MRP	Mainside (Figure ES-1)	Remedial Investigation	None	Remedial Investigation fieldwork is planned for completion in 2024.
UXO 028	Marine Corps Exchange	None	Site located at intersection of Purvis Road and Russell Road; mortars reportedly recovered during construction of Marine Corps Exchange in late-1970s	MRP	Mainside (Figure ES-1)	Site Inspection	None	No action for site agreed based on Site Inspection Report completed in 2011 and Closeout Document in 2012. Further investigation may be warranted to be discussed by Quantico Project Managers Team.
UXO 033	FBI Training Area 8	29	Site within suspected firing line and firing fan of former artillery and mortar range used from 1943 to the mid-1950s. Site area is 400 acres	MRP	Guadalcanal (Figure ES-2)	Remedial Investigation	None	Remedial Investigation Work Plan is scheduled for completion in 2023.
UXO 034	Lunga Recreation Area South	27	Site within suspected firing fan of former artillery and mortar range used from 1943 to the mid-1950s. Site area is 96 acres	MRP	Guadalcanal (Figure ES-2)	Remedial Investigation	None	Remedial Investigation ongoing; Phase 2 fieldwork for munitions constituents anticipated in 2020.
UXO 035	Lunga Reservoir	39	Site within suspected firing fan of former artillery and mortar range used from 1943 to the mid-1950s. Site area is 520 acres (consisting of Lunga Reservoir)	MRP	Guadalcanal (Figure ES-2)	Remedial Investigation	None	A Shoreline Time Critical Removal Action was completed in 2019. Remedial Investigation Work Plan is scheduled for completion in 2023.

Table ES-1. Environmental Restoration Program Open Sites Overview

Fiscal Year 2020 Site Management Plan
Marine Corps Base Quantico, Quantico, Virginia

Site Identification and Designation	Site Name	Operable Unit (OU)	Abbreviated Site History	ERP Program Category	MCBQ Section	Current ERP Phase	Fiscal Year 2020 Goals	Comments
UXO 036	Grenade Pit	40	Grenades identified during recent (2015) utility trenching near Building 27002. Area appears to be munitions disposal area from previous range cleanups. Site area is approximately 12 acres	MRP	Guadalcanal (Figure ES-2)	Remedial Investigation	RI Start	Remedial Investigation Work Plan is scheduled for completion in late 2019.
UXO 037	Chopawamsic Creek Range Fans	41	Firing fans for former 81 mm mortar, artillery, and training ranges used between the 1920s and 1940s. Site consists of the aquatic portions only of the former firing fans	MRP	Mainside (Figure ES-2)	Remedial Investigation	None	Remedial Investigation Work Plan is scheduled for completion in 2025.
UXO 038	Lunga Recreation Area Central	35	Site within suspected firing fan of former artillery and mortar range used from 1943 to the mid-1950s. Site area is 109 acres	MRP	Guadalcanal (Figure ES-2)	Remedial Investigation	None	Remedial Investigation ongoing.
UXO 039	Lunga Recreation Area North	36	Site within suspected firing fan of former artillery and mortar range used from 1943 to the mid-1950s. Site area is 158 acres	MRP	Guadalcanal (Figure ES-2)	Remedial Investigation	None	Remedial Investigation ongoing.

Notes:

1. Fiscal Year 2020 Goals are based on those identified by Quantico Project Managers Team (QPMT) as being EPA or Navy Targets.

2. Current ERP Phase is based on Section 5.2 of Department of the Navy Environmental Restoration Program Manual, August 2006. The Current ERP Phase reflects the actual phase for the site, not the current ERP Phase identified within the Navy "Normalization of Data" Database (NORM)

3. Site 04 is identified as one site herein based on the use of OU-4 in recent project documents including the ROD; historical documents identify three sites related to this OU consisting of: Site 4, L-2 (Old Landfill); L-3 (DRMO Scrapyard); and B-8 (Building 669)

Abbreviations:

ERP - Environmental Restoration Program

FYR - Five Year Review

IRP - Installation Restoration Program

LTM - Long Term Monitoring

LUC - Land Use Controls

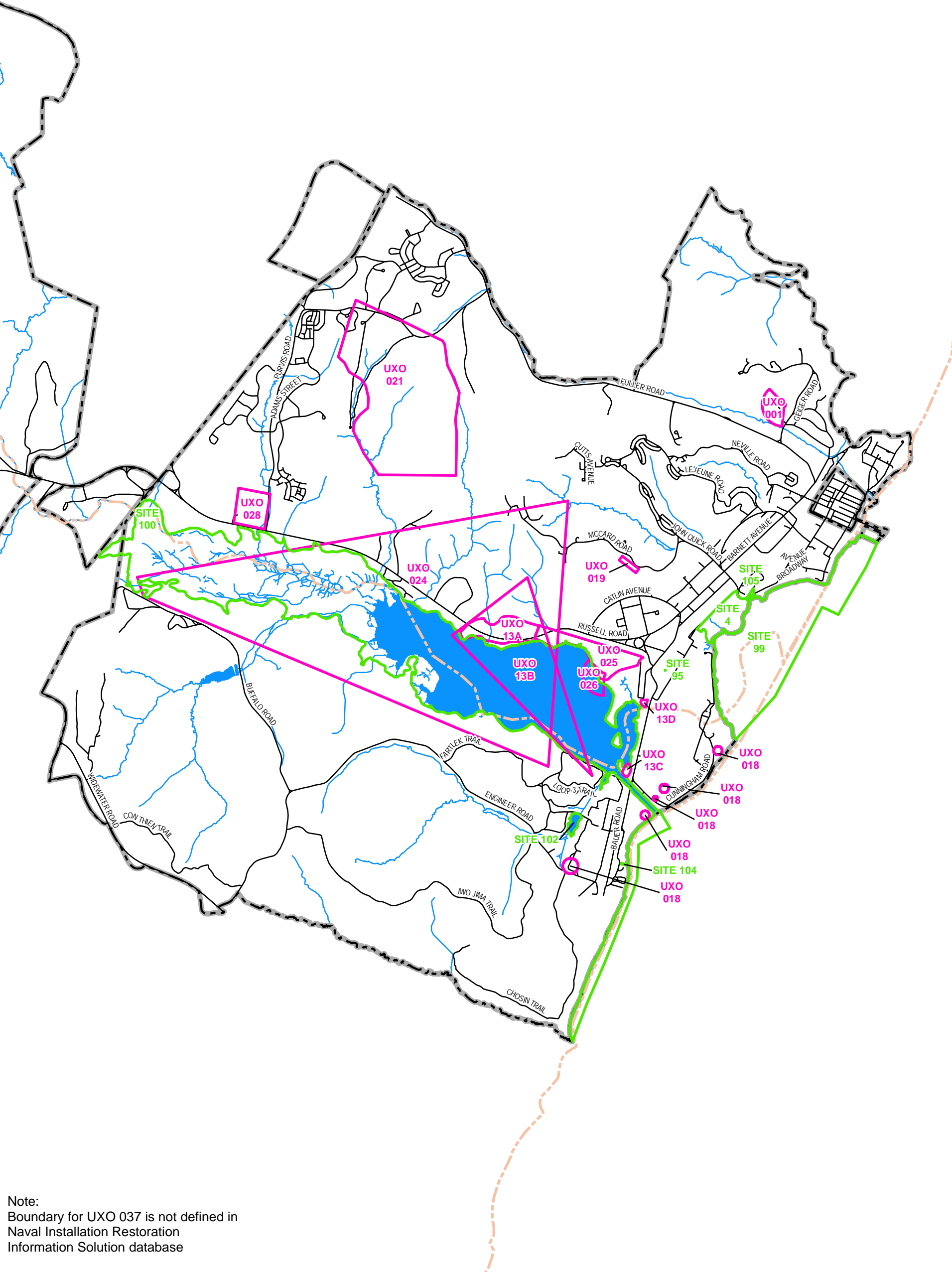
mm - millimeter

MRP - Munitions Response Program

RACR - Remedial Action Completion Report

ROD - Record of Decision

TCRA - Time Critical Removal Action



Note:
Boundary for UXO 037 is not defined in
Naval Installation Restoration
Information Solution database

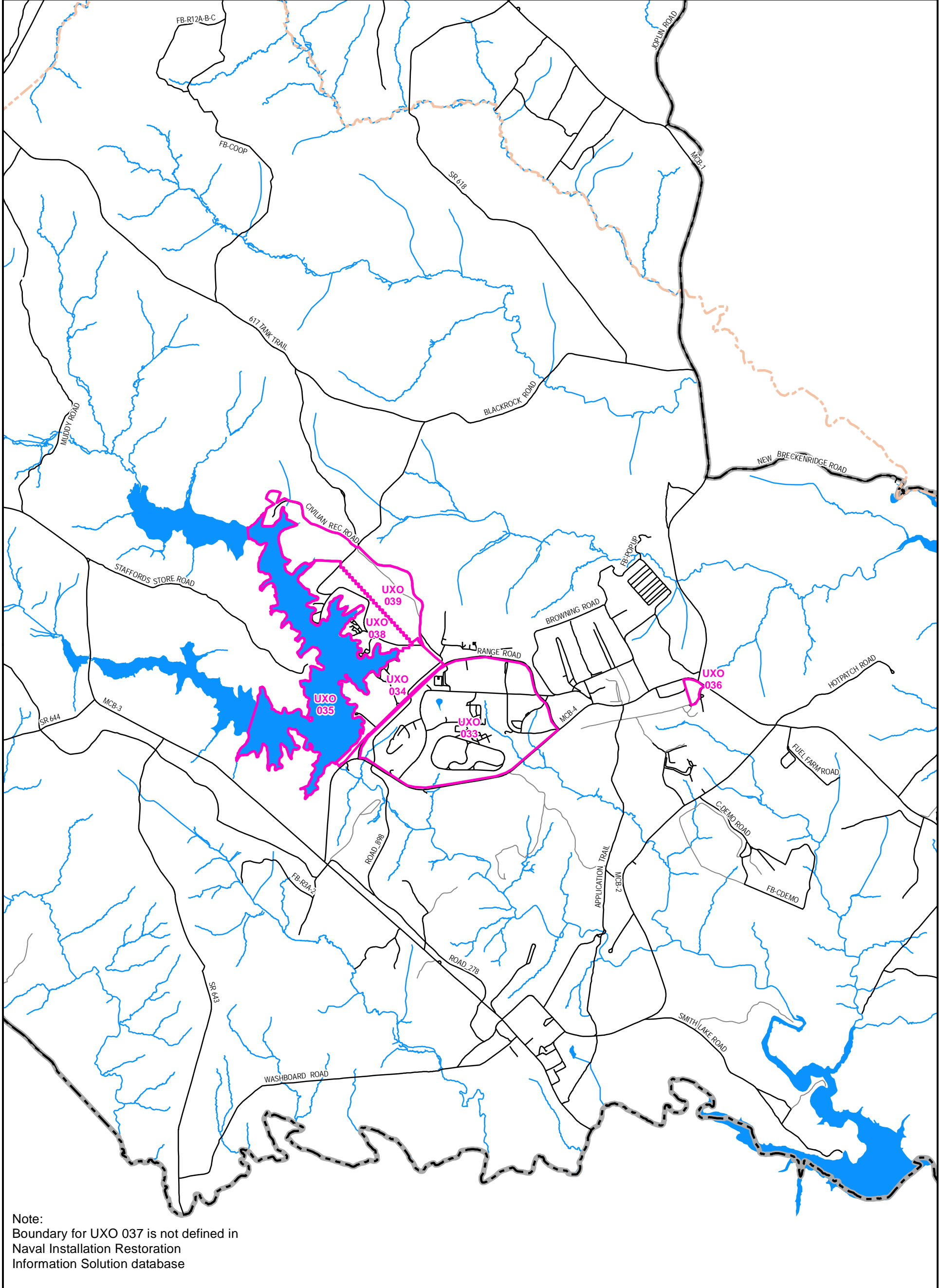
Legend

- IRP Site
- MRP Site
- Main Road
- Minor Road
- County Line
- Stream
- Lake/Creek/Reservoir
- Base Boundary



0 3,000 6,000
Feet

Figure ES-1
Open Site Location Map - Mainside
Site Management Plan
Marine Corps Base Quantico (MCBQ)
Quantico, Virginia



Note:
Boundary for UXO 037 is not defined in
Naval Installation Restoration
Information Solution database

Legend

- Active MRP Site Boundary
- Main Road
- Minor Road
- County Line
- Stream
- Lake/Creek/Reservoir
- Base Boundary



0 3,000 6,000
Feet

Figure ES-2
Open Site Location Map - Guadalcanal Section
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Quantico, Virginia

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Acronyms and Abbreviations

AGC	Advanced Geophysical Classification
AICUZ	Air Installations Compatible Use Zone
AOC	area of concern
APS	Aerial Photographic Survey
ASR	Archives Search Report
BEQ	bachelor enlisted quarters
bgs	below ground surface
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Register
COC	contaminant of concern
CWRA	Civilian Workers Recreation Area
DDT	Dichloro-diphenyl-trichloroethane
DDX	1,1,1-Trichloro-2,2-bis(4-chlorophenyl)ethane, 1,1-Dichloro-2,2-bis(4-chlorophenyl)ethane, and 1,1-Dichloro-2,2-bis(4-chlorophenyl)ethene
DERP	Defense Environmental Restoration Program
DGM	digital geophysical mapping
DMM	discarded military munition
DoD	Department of Defense
DRMO	Defense Reutilization and Marketing Office
DTA	desktop audit
DTAWS	desktop audit with sampling
EE/CA	Engineering Evaluation/Cost Analysis
EOD	explosives ordnance disposal
EPA	United States Environmental Protection Agency
ER,N	Environmental Restoration, Navy
ERP	Environmental Restoration Program
ESTCP	Environmental Security Technology Certification Program
FBI	Federal Bureau of Investigation
FFA	Federal Facility Agreement
FUDS	formerly utilized defense site
FS	Feasibility Study
FY	fiscal year
FYR	Five-Year Review
GIS	geographic information system
HRS	Hazard Ranking System
IAS	Initial Assessment Study
IRA	Interim Removal Action
IRP	Installation Restoration Program
LTM	long-term monitoring
LUC	land use control
MARCORSYSCOM	Marine Corps Systems Command

MC	munitions constituents
MCBQ	Marine Corps Base Quantico
MDAS	material documented as safe
MEC	munitions and explosives of concern
mm	millimeter
MPPEH	material potentially presenting an explosive hazard
MRP	Munitions Response Program
MRS	Munitions Response Site
MRSPP	Munitions Response Site Prioritization Protocol
NA	not applicable
NAVFAC	Naval Facilities Engineering Command
Navy	Department of the Navy
NCWRA	Non-Civilian Workers Recreation Area
NFA	no further action
NIRIS	Naval Installation Restoration Information Solution
NPL	National Priorities List
NREA	Natural Resources and Environmental Affairs
NTCRA	Non-Time Critical Removal Action
O&M	operations and maintenance
ORC	oxygen release compound
OU	Operable Unit
PA	Preliminary Assessment
PCB	polychlorinated biphenyl
PNA	Protected Natural Area
QPMT	Quantico Project Managers Team
RA	Removal Action
RACR	Remedial Action Construction Report
RFA	Resource Conservation and Recovery Act Facility Assessment
RG	remedial goal
RI	Remedial Investigation
ROD	Record of Decision
SI	Site Inspection
SMP	Site Management Plan
SSP	Site Screening Process
STP	sewage treatment plant
SWMU	solid waste management unit
TBS	The Basic School
TCRA	Time-Critical Removal Action
TECOM	Marine Corps Training and Education Command
USACE	United States Army Corps of Engineers
UXO	unexploded ordnance
VDEQ	Virginia Department of Environmental Quality

Purpose and Organization of Site Management Plan

This document presents the Fiscal Year (FY) 2020 Site Management Plan (SMP) for the Department of the Navy (Navy) Environmental Restoration Program (ERP) for Marine Corps Base Quantico (MCBQ) located in Quantico, Virginia. The SMP has been developed on behalf of Naval Facilities Engineering Command (NAVFAC) Washington as required within the Federal Facility Agreement [FFA] (EPA, 1998) for MCBQ². This SMP serves as a planning document in planning, reviewing, and setting budget and schedule priorities for the ERP activities at MCBQ. The SMP is updated on an annual basis to revise priorities of remedial response activities, as more current information becomes available, and allows for annual adjustment in scheduled activities due to federal budgetary limitations, changes in the level of effort required for remedial response activities, or other unanticipated events. This FY 2020 SMP supersedes all earlier versions of the SMP including the FY 2019 SMP (CH2M, 2017).

The purpose of the ERP is to reduce the risk to human health and the environment from legacy waste disposal operations and hazardous substance spills at Navy facilities following the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) regulatory process (Department of the Navy Environmental Restoration Program Manual [Navy, 2018]). The ERP activities identified within this SMP fall into two program categories:

- **Installation Restoration Program (IRP)** – The IRP addresses releases of hazardous substances, pollutants, or contaminants that pose toxicological risks to human health or the environment.
- **Munitions Response Program (MRP)** – The MRP addresses environmental health and safety hazards from unexploded ordnance (UXO), discarded military munitions (DMMs), and munitions constituents (MC). Incidental to hazardous waste remediation, a limited number of hazards associated with military munitions were previously addressed under the IRP. The MRP was created to more thoroughly address potential hazards remaining from the Navy's past use of military munitions.³ The term Munitions Response Site (MRS) is used throughout the SMP to identify individual MRP sites.

MCBQ was initially identified on the United States Environmental Protection Agency (EPA) National Priorities List (NPL) on May 31, 1994. The FFA for MCBQ for the implementation of Remedial Investigations (RIs) and actions in accordance with CERCLA was signed on February 4, 1999, by the Navy and EPA Region 3 (EPA, 1998).⁴

The ERP at MCBQ is implemented by the Quantico Project Managers Team (QPMT), which consists of representatives from the Navy, MCBQ, EPA Region 3, and the Commonwealth of Virginia Department of Environmental Quality (VDEQ).⁵ VDEQ did not consent to becoming a signatory to the FFA and therefore is not bound by the FFA requirements; however, VDEQ has agreed to participate in the ERP planning process at MCBQ, to provide document review, and to provide technical guidance with regard to VDEQ requirements and regulations.

- **Section 1** of this SMP contains the SMP purpose and document organization, MCBQ facility background, and CERCLA regulatory background and process for the ERP sites.
- **Section 2** presents an overview on the ERP site identification, classification, and prioritization for MCBQ. The primary focus of this SMP is on remedial response activities associated with open sites (rather than sites

² MCBQ was formerly identified as Marine Corps Combat Development Command Quantico within the FFA.

³ The Department of Defense (DoD) created the Military Munitions Response Program in 2001 through DERP. The Navy refers to its munitions program as the MRP.

⁴ The FFA and the earlier SMP documents were developed for the implementation of the IRP. The MRP was established by the Navy in 2001. The MRP was subsequently presented in the SMP documents as part of the Navy's ERP for MCBQ.

⁵ The Maryland Department of the Environment is also engaged through the QPMT for sites and response activities within the Potomac River.

closed as no action or no further action [NFA]). **Section 2** is used to differentiate between open and closed sites; additional details of each group are provided in subsequent sections of the SMP.⁶

- **Section 3** presents each of the open IRP sites with site identification/designation, site background, history, site schedule, FY 2020 goals, and current ERP phase (for example, RI, Long-term Management) based on the CERCLA process and the Department of the Navy Environmental Restoration Program Manual (Navy, 2018).
- **Section 4** presents each of the open MRSs with site identification/designation, site background, history, site schedule, FY 2020 goals, and current ERP phase in a similar manner to the IRP sites.
- **Section 5** presents an abbreviated summary of the last Five-Year Review (FYR) completed (Fourth FYR Report in June 2016).
- **Section 6** presents a summary of Land Use Controls (LUCs) in effect or pending across MCBQ at the ERP sites including a figure identifying the locations and types of the LUCs.
- **Section 7** presents the references used in this SMP.

Ten appendixes are identified in this SMP as specified below:

- **Appendix A** – Closed and Deferred Installation Restoration Program Sites
- **Appendix B** – Closed and Deferred Munition Response Program Sites
- **Appendix C** – Hazard Ranking System Scoring for Installation Restoration Program Sites
- **Appendix D** – Chemical-specific Values for Hazard Ranking Scoring for Installation Restoration Program Sites
- **Appendix E** – Modified Hazard Ranking System Scoring Worksheet and Methodology for Installation Restoration Program Sites
- **Appendix F** – Munitions Response Site Prioritization Protocol (MRSP) Rankings
- **Appendix G** – Munitions Response Program Terminology
- **Appendix H** – Environmental Restoration Program Goals – Updated 15 October 2019
- **Appendix I** – Signature Page Dates for Pertinent Environmental Restoration Program Documents
- **Appendix J** – Environmental Restoration Program Figures

1.1 Marine Corps Base Quantico Facility Background

The MCBQ installation is located approximately 35 miles south of Washington, D.C. and approximately 75 miles north of Richmond, Virginia. The installation is approximately 59,000 acres and lies within southern Prince William, northern Stafford, and eastern Fauquier counties. The installation is bounded to the north by Cedar Run and Virginia State Route 646; to the east by the Potomac River; to the south by Tank Creek, Aquia Creek, and Virginia State Route 610; and to the west by Dorrels Run and Virginia State Route 612. The Base is divided into two sections—the Mainside (approximately 7,900 acres), located to the east of Interstate 95, and the Guadalcanal Area (approximately 51,000 acres), located to the west of Interstate 95 (MCBQ, 2015). **Figure 1-1** illustrates the general location of MCBQ. **Figure 1-2** contains a general map of the installation.

The following sections describe those environmental and ecological conditions at MCBQ that are relevant to the development of this SMP.

⁶ In addition to closed sites, sites that have been deferred to other regulatory programs and administratively removed from the ERP (for example, a site deferred to the Commonwealth of Virginia Petroleum Underground Storage Tank Program) are identified.

1.1.1 Land Use

The primary MCBQ mission is training for general combat by providing a varied background in tactical operations and performing research and development of Marine Corps equipment. The majority of MCBQ's real estate has always been devoted to outdoor training areas and live-fire ranges. Primarily located in the Guadalcanal Area, the ranges and training areas encompass 54,440 acres with 184 square miles of special use airspace with a 15,000 foot ceiling. The training and range areas also include: 55 active live and non-live fire ranges and training facilities; 39 training areas; 66 landing zones; 3 drop zones; and a full scope of military and law enforcement training from small arms familiarization, to company-size live fire and maneuver, to delivery of aerial ordnance (MCINCR – Marine Corps Base Quantico, 2019).

The original installation, which consisted of the Mainside only, supported skeet ranges, rifle ranges, pistol ranges, machine gun ranges, grenade ranges, mortar ranges, and aerial bombing target ranges. The purchase of the Guadalcanal Area in 1943 provided the land needed for large artillery and air-to-ground ordnance training ranges.

Within the installation are several training camps located in the Guadalcanal Area: Camp Barrett (The Basic School [TBS]) is located along the southern boundary of the installation; Camp Upshur is located along the northern boundary; and Camp Goettge (abandoned) is located along the western boundary (**Figure 1-2**).

Also within the installation boundary are non-Marine Corps-managed properties: the town of Quantico, which is located wholly within the installation along the northeastern boundary of the Base, and the Department of Justice complex consisting of the Federal Bureau of Investigation (FBI) laboratory, Drug Enforcement Administration/FBI Academies, and shooting ranges, which are located within the central portion of the installation.

Tenants within the installation include colleges, schools, and other Marine Corps Commands. The following table lists the tenants at MCBQ:

Colleges	Schools	Other Tenants/Commands
<ul style="list-style-type: none"> • Marine Corps University • Marine Corps War College • Marine Corps Command & Staff College • Marine Corps College of Continuing Education 	<ul style="list-style-type: none"> • Expeditionary Warfare School • Communications School • Enlisted Professional Military Education • Alfred M. Gray Marine Corps Research Center • The Basic School • Officers Candidate School 	<ul style="list-style-type: none"> • Marine Corps Systems Command (MARCORSYSCOM) • Marine Security Guard • Marine Helicopter Squadron One (HMX-1) • Marine Corps Air Facility • Marine Corps Recruiting Command • Navy-Marine Corps Relief Society • Human Resources and Organizational Management • Defense Commissary Agency • Weapons Training Battalion • Joint Non-Lethal Weapons Directorate • American Red Cross

Land surrounding MCBQ is generally rural, residential, or recreational. Located northeast of the installation is Prince William Forest Park, a national park that covers approximately 17,000 acres. The park is used for camping, hiking, and picnicking. Also to the northeast is the Quantico National Cemetery, encompassing 726 acres near Interstate 95 and Virginia State Route 619. Locust Shade Park is located adjacent to the Quantico National Cemetery between Interstate 95 and U.S. Highway 1. The southern and western areas of the installation are primarily rural, although business and housing developments are growing along State Route 610. The town of Triangle borders the MCBQ main gate located along Fuller Road near U.S. Highway 1.

MCBQ is nearly 88 percent forested (52,090 acres) consisting of the following primary forest habitat types: mast-producing hardwoods (29,193 acres); mixed pine-hardwoods (8,847 acres); non-mast producing hardwoods (2,607 acres); and conifers (11,443 acres). Timber is produced and harvested in both areas (the Mainside and

Guadalcanal Area) of MCBQ. All forested areas are managed, as necessary, to control forest pests and wildfires (MCBQ, 2015).

Approximately 3,000 of the 59,000 acres at MCBQ are considered semi-improved grounds including fire-maintained grasslands, range target areas, powerline rights-of-way, landing zones, drop zones, and wildlife openings. Approximately 2,600 acres at MCBQ are considered improved grounds consisting primarily of buildings and associated lawn and landscape plantings. Approximately 3,900 acres of MCBQ consist of various types of wetlands including approximately 1,400 acres of non-forested wetlands (MCBQ, 2015).

1.1.2 Topography

The topography of the MCBQ is characterized by low rolling hills typical of the Piedmont physiographic province. Elevation ranges from near sea level along the Potomac River to 467 ft above sea level near the origin of the North Branch of Chopawamsic Creek. Overall, the land slopes to the southeast at a rate of about 20 feet per mile (MCBQ, 2015).

1.1.3 Hydrology

The entire Base is located within the Chesapeake Bay watershed. The Quantico Creek, Little Creek, Chopawamsic Creek, Tank Creek, and Aquia Creek watersheds drain the southeastern areas of MCBQ into the Potomac River. The Cedar Run, South Fork Quantico Creek, Beaverdam Run, and Cannon Creek watersheds drain the northwestern areas of MCBQ. With the exception of Cedar Run (which flows north/northwest into Occoquan Creek), these creeks flow into the Potomac River.

MCBQ is bounded on the east by more than three miles of Potomac River shoreline. The Potomac River is divided into three estuarial zones, consisting of the Tidal Potomac River, the Potomac Transition Zone, and the Potomac Estuary. MCBQ is adjacent to the Potomac Transition Zone, located between the Tidal Potomac River and the Potomac Estuary. The Potomac Transition Zone receives fresh water from the Tidal Potomac River and more saline water from the Potomac Estuary.

Chopawamsic Creek, which flows southeast into the Potomac River, is approximately 1,000 yards wide at its widest point (bank to bank), swampy, and estuarial on the Mainside. The Chopawamsic estuary covers approximately 377 acres and is fed by a 12,000-acre watershed.

1.1.4 Water Usage

The quality of the water on Base affects potable water supplies in communities on and off Base as detailed below. The base watersheds supply water to four reservoirs (MCBQ, 2015):

- Breckinridge Reservoir, which supplies water to the Mainside area of MCBQ. This reservoir is the principal water supply for MCBQ and encompasses 47 acres with a watershed of almost 13,000 acres. The reservoir capacity is approximately 168 million gallons.
- Smith Lake Reservoir, which supplies water to Stafford County and the west side of MCBQ. This reservoir is 220 acres and has a capacity of two billion gallons. Water from the Aquia Creek watershed goes to the Smith Lake Reservoir.
- Lunga Reservoir, which is a secondary water source for both Smith Lake and Breckinridge Reservoir. The reservoir is 477 acres with a watershed of 6,880 acres and capacity of 1.75 billion gallons.
- Lake Jackson, which provides water to Manassas in Prince William County. Lake Jackson is located approximately four miles north of MCBQ.

Potable water production supplies drinking water to a large percentage of the Base. Potable water from MCBQ comes from three sources, depending on the location on the Base:

- East of Interstate 95: Potable water provided to MCBQ buildings from the Mainside Water Treatment Plant; source water primarily from the Breckinridge Reservoir.
- West of Interstate 95: Potable water provided by Stafford County Utilities Department with water from Smith Lake Reservoir.
- Camp Upshur: Potable water provided by two deep groundwater wells. These wells are screened at depths greater than 300 feet below ground surface (bgs) (Tetra Tech, 2002a).

Reportedly, nine inactive groundwater supply wells exist at MCBQ (Tetra Tech, 2002a). In approximately 1993, all of the wells were capped as recommended by VDEQ. All wells are inactive or on standby status for potential emergencies; none of these wells have been used for potable water for more than 20 years (Tetra Tech, 2002a).

Recreational activities such as boating, fishing, and hunting are performed at the Breckinridge Reservoir, Smith Lake Reservoir, and Lunga Reservoir ⁷ in addition to some of the smaller surface water bodies at MCBQ. Boat ramps are present at each of these surface water bodies and they are identified as fishing areas by MCBQ (MCBQ, 2015). The Potomac River is not used for drinking water or agricultural irrigation uses for at least five miles downstream and two miles upstream of the Base. The Potomac River is used for both recreational and commercial fishing adjacent to the Base (ATSDR, 2004).

1.1.5 Ecosystems

Approximately 88 percent of MCBQ is wooded. These woodlands are used for training, recreation, timber management, aesthetics, wildlife management, and watershed protection. Major wildlife includes deer, turkey, squirrel, rabbit, quail, grouse, dove, waterfowl, fox, beaver, muskrat, skunk, coyote, and raccoon. Otter and mink have been reported in nearby water bodies. Popular game species aboard MCBQ include white-tailed deer, wild turkey, largemouth bass, and black crappie.

There are approximately 3 miles of managed trout streams, 12 miles of tidal shoreline, and 9 reservoirs, lakes, and ponds located at MCBQ. Fresh water fish include small mouth bass, largemouth bass, white bass, bluegill, red ear sunfish, pickerel, catfish, and rainbow trout. The rainbow trout are stocked by the Natural Resources and Environmental Affairs (NREA) Office of MCBQ.

There are approximately 3,900 acres of wetlands within MCBQ (MCBQ, 2015). The wetlands distribution across MCBQ generally falls into three major categories:

- Palustrine wetlands are shallow, freshwater wetlands of the Chopawamsic Creek, Aquia Creek, Cedar Run, and Quantico Creek watersheds (2,623 acres).
- Riverine wetlands are freshwater wetlands associated with the deeper water habitats of flowing creeks and the Potomac River (599 acres).
- Lacustrine wetlands are deep freshwater habitats (for example, found at Lunga Reservoir, Breckinridge Reservoir, and Smith Lake Reservoir) (734 acres).

The intertidal wetlands in Chopawamsic Creek marsh have been identified as a valuable nursery area for Potomac River fish species. Aquatic wildlife includes white perch, yellow perch, silversides, gizzard shad, striped bass, American eel, striped killfish, bluegill, pumpkinseed, spottail shiner, snakehead, mosquito fish, shad, and herring.

Rare, threatened, and endangered species have been identified at MCBQ. These include birds (for example, bald eagle), plants (for example, small whorled pogonia), and invertebrates (dwarf wedgemussel) (MCBQ, 2015). Field surveys for rare, threatened, and endangered species are completed by MCBQ NREA in accordance with the Base Integrated Natural Resources Management Plan as part of the overall efforts for the management and conservation of natural resources (MCBQ, 2015).

⁷ Lunga Reservoir is currently closed, pending munitions removal actions at the Lunga Recreation Area.

1.2 Regulatory Background

The ERP is implemented by the Navy following the CERCLA regulatory framework through the establishment of the Defense Environmental Restoration Program (DERP) with the promulgation of the Superfund Amendments and Reauthorization Act in 1986 (Navy, 2018). Through DERP, the Navy conducts environmental restoration activities at sites on active Navy and Marine Corps installations (such as MCBQ), installations undergoing Base Realignment and Closure, and formerly utilized defense sites (FUDS). The ERP goal is to provide for cost-effective and timely site assessment, planning, and remediation of identified releases consistent with DERP requirements.

The MCBQ FFA (EPA, 1998) serves as a negotiated legal agreement governing the CERCLA administrative process for cleanup at NPL facilities. The intention is for the Navy to thoroughly investigate environmental impacts associated with past and present activities with completion of appropriate response action as necessary to protect public health, welfare, and the environment. The FFA also provides details on the working relationship between the parties (Navy and EPA) including a procedural framework and schedule for developing, implementing, and monitoring CERCLA response actions in addition to dispute resolution procedures.

Funding for the ERP originates from the Environmental Restoration, Navy (ER,N) account. The following activities are not considered eligible for ER,N funding or a response action through the ERP (Navy, 2018):

- The closure of treatment, storage, and disposal units regulated by a Resource Conservation and Recovery Act permit or operating under interim status.
- Any routine operation, management, or maintenance at an operating Navy facility or site that is not part of an ERP activity, including routine operational range maintenance and sustainment activities.
- Activities to terminate a Nuclear Regulatory Commission license.
- An immediate, short-term response required to address a spill or release (for example, a DoD aircraft crash).
- Explosives or munitions emergency responses.
- Responses at contractor-owned and -operated facilities, unless the facility was owned by, leased to, or otherwise possessed by the United States at the time of the actions leading to contamination, or contamination attributable to the Navy has migrated from or military munitions have come from an ERP eligible site.
- Responses at Defense Plant Corporation and similar properties for which successor agencies and departments other than the DoD are responsible for ERP activities.
- Responses to UXO, DMM, or MC on operational ranges, operating storage or manufacturing facilities, or facilities that are used for or were permitted for the treatment or disposal of military munitions.
- Responses, including surveys, containment, removal, or disposal, to asbestos and lead-based paint that have not been released to the environment.
- Activities that duplicate a response that was completed under another ERP authority (for example, a CERCLA response when a release was already investigated and addressed under a state authority) unless the response has failed to achieve its ERP objectives.
- Activities that are subject to a legal agreement or property transfer document (for example, a deed or environmental services corrective action) between the DoD (or the United States) and another party that assigns ERP responsibility to a party other than the DoD.
- Responses at facilities for which there are no records or evidence that DoD was the CERCLA owner or operator. Documentation of physical evidence (for example, site visit documenting military munition use) can be a record.
- Activities funded by a specific appropriation.

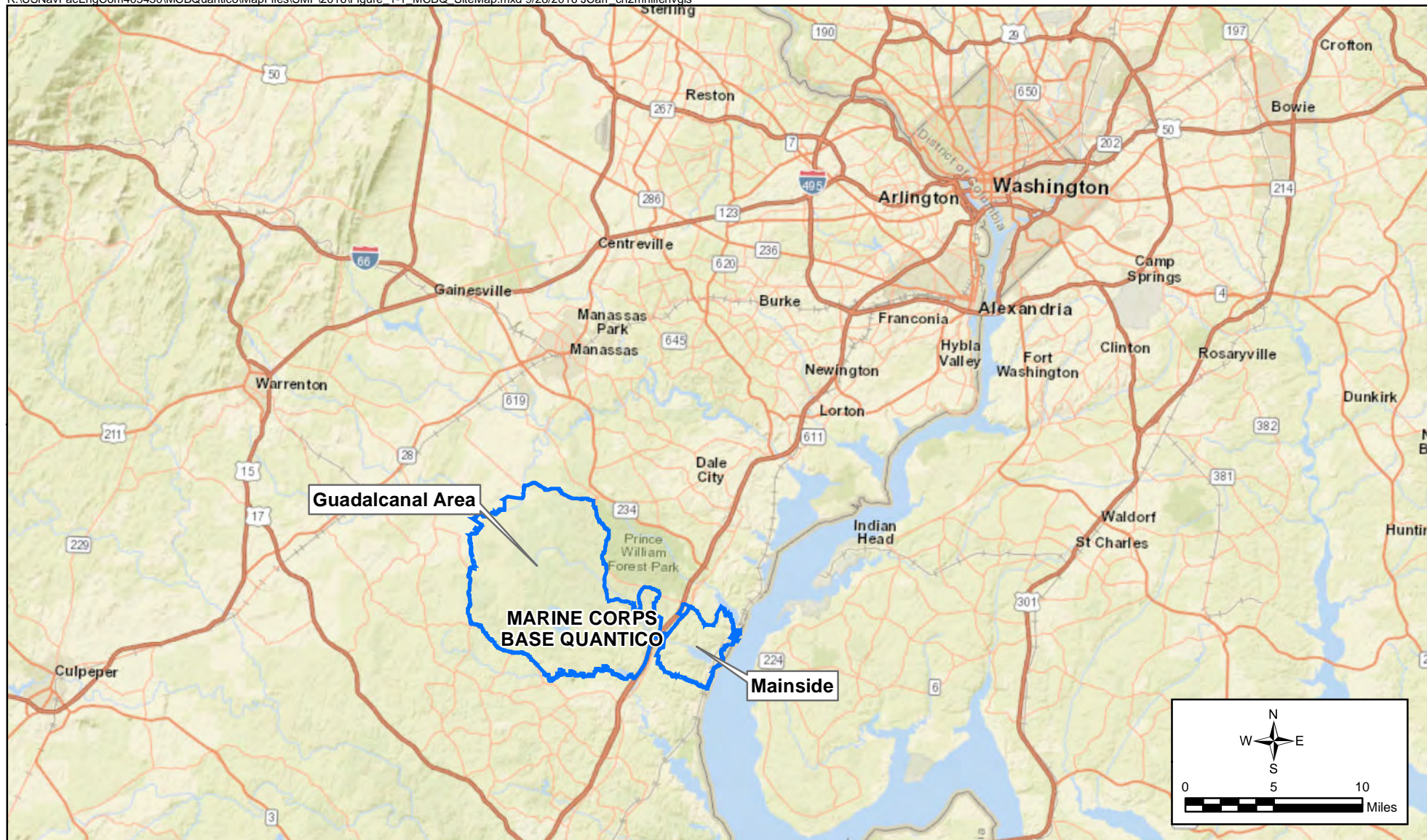
- Responses to address releases due to a successor owner's or operator's actions, omissions, or lack of maintenance that allowed the release to occur.
- Responses to naturally occurring substances.
- Payments to settle response cost claims.
- Responses at locations outside the United States

The ERP phases of the remedial process are illustrated on **Figure 1-3** based on CERCLA guidance (EPA, 1992) and Navy guidance (Navy, 2018). Each phase is also summarized below. The discovery and determination of a new ERP site is managed through the QPMT with the initiation of a site nomination letter.

- **Preliminary Assessment (PA)/Site Inspection (SI)** – Based on the review of the existing information about hazardous waste disposal practices at an installation. Limited field data may be collected to determine the nature of any releases and potential threat to any receptors. Sites that do not pose an unacceptable risk to human health and the environment are designated as “NFA” sites. The NFA designation is also referred to as “no further remedial action planned.” Sites for which the PA/SI indicates a potential risk to human health and the environment either move into the RI/Feasibility Study (FS) phase, or involve taking a Removal Action (RA).
- **RAs** – In situations where prompt action is required to address releases or threatened release, implementation of an RA to be performed in an expedited manner may be performed. EPA categorizes RAs in three ways: (1) Emergency RAs; (2) Time-Critical Removal Actions (TCRAs); and (3) Non-Time Critical Removal Actions (NCRAs). These categories are based on the type of situation, the urgency of the threat of the release, and the subsequent time frame in which the action shall be initiated. An RA could be either the final remedy or an interim action, followed by a longer-term remedial action as the final remedy.
- **RI/FS** – The RI includes a sampling and analysis program that is adequate to determine the nature and extent of contamination, and a baseline ecological and human health risk assessment. If it is determined that remedial action is necessary, the FS is conducted which includes a detailed evaluation of remediation alternatives. The RI or FS also may recommend NFA sites.
- **Record of Decision (ROD)** – Following completion of the RI/FS phase, the preferred alternative is documented in a Proposed Plan for public comments. All required remedial actions for the site or operable unit (OU) are documented in the ROD. The ROD includes a summary of site conditions, selected remedy, remedial action objectives, and the rationale for selecting the remedy.
- **Remedial Design** – This phase involves preparing the detailed design of the remedial action selected in the ROD.
- **Remedial Action Construction** – The designed remedial system is constructed at the site during this phase. This phase also may include any construction related to implementation of LUCs.
- **Remedy in Place** – This milestone is achieved when the construction of a long-term remedy is complete and the remedy is operating as planned to meet project remedial action objectives in the future, or a short-term remedy has been successfully implemented and the final documentation is being prepared. Determination of achieving the remedy in place milestone is a Navy decision and regulatory concurrence for this milestone is not needed.
- **Remedial Action Operation** – This phase involves operation, maintenance, and monitoring actions for the remediation system and site. The remedial action operation phase may also include implementation, and management/maintenance of LUCs, if these were part of the selected remedial action in the ROD. Periodic monitoring reports are prepared during this phase to document performance of remediation systems.
- **Response Complete** – This milestone signifies that the Removal Action Objectives have been met and the remedial action operation phase, if required, has achieved clean-up goals specified in the ROD. Formal documentation for the Response Complete milestone is essential to ensure recognition of completion of

clean-up goals at the site. Prior to claiming completion of the response complete milestone, regulatory concurrence of this documentation is required.

- **Interim Remedial Action** – An interim remedial action is a remedial action undertaken as a component of a larger remedy prior to the selection of the final remedy. The interim remedial action decisions are documented in an Interim ROD and are treated as a partial solution to a complex (for example, multi-media) contaminant problem or as a remedial action at one site included within a multi-site OU. A summary of these interim actions is included in the final ROD. Because of the interim status, implementing an interim remedial action does not meet the remedy in place or response complete milestones; however, if an interim action becomes the final action through a final ROD, then the remedy can meet the metric for achieving remedy in place of response complete.
- **Long-term Management** – Following the response complete milestone, this phase may be required to monitor long-term protectiveness of the remedy. Actions during this phase may involve groundwater monitoring, implementation and management of LUCs, and preparation of FYR reports. The long-term management phase also is required when the clean-up goals do not allow unrestricted use.
- **Site Closeout** – This milestone signifies that the Navy has completed active management and monitoring at a site, the remedy is protective of human health and the environment, contaminant levels at the site allow for unrestricted use and unlimited exposure, and there is no expectation of expending additional ER,N or Base Realignment And Closure funds at the site. The site closeout milestone can occur at any stage during the response action, depending upon the remediation requirements, including at the completion of the PA/SI, RAs, RI/FS, remedial action operation, or Long-term Management phases.



Legend
 MCBQ Boundary

Figure 1-1
MCBQ Location Map
 Site Management Plan
 Marine Corps Base Quantico (MCBQ)
 Quantico, Virginia




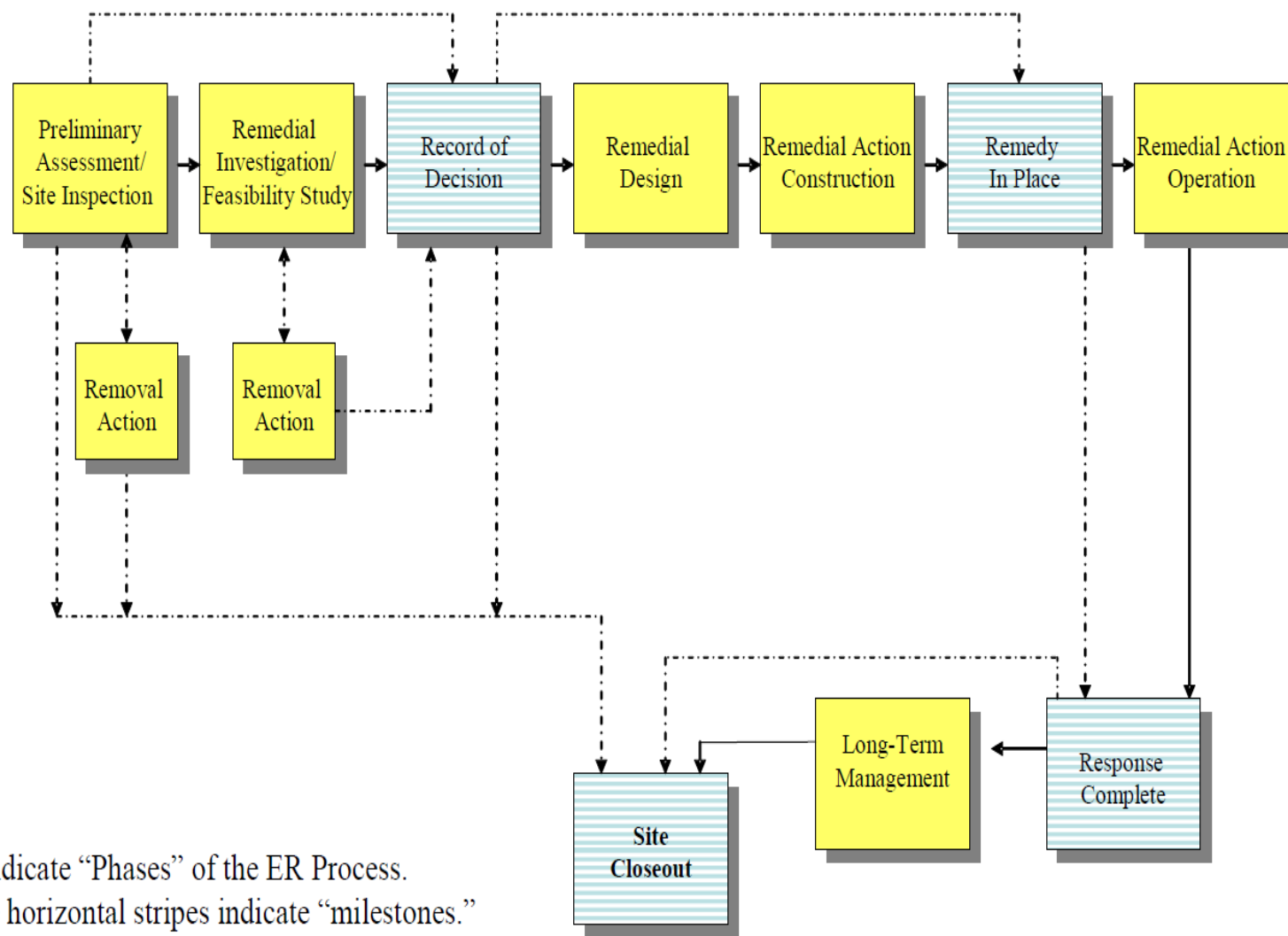
-  County Boundary
- Base Boundary
-  Stream
-  Lake/Creek/Reservoir

Figure 1-2
MCBQ Base Map
Site Management Plan
Marine Corps Base Quantico (MCBQ)
Quantico, Virginia

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Notes:

Yellow boxes indicate “Phases” of the ER Process.

Boxes with blue horizontal stripes indicate “milestones.”

Figure 1-3. Environmental Restoration Phases

Site Management Plan

Marine Corps Base Quantico, Quantico, Virginia

Note: Figure adapted from Navy (2018) and EPA (1992)

Environmental Restoration Program Site Overview

This section presents an overview of the historical processes used in the identification of ERP sites at MCBQ based on the FFA and subsequent documents. In addition, this section identifies the current status for each site based on the following:

- **Open Sites** – Sites that have not reached the Site Closeout ERP phase; typically, these sites are undergoing some type of investigation, remedial alternatives, Remedial Design, remedial action, and/or long-term management.
- **Closed Sites** – Sites that have reached the Site Closeout ERP phase. This category includes sites that were closed out through the ERP remedial process including sites closed out through the completion of Desktop Audits (DTAs) and/or other desktop evaluation prior to the RI/FS phase.
- **Deferred Sites** – Sites that have been deferred to other regulatory programs and administratively removed from the ERP (for example, a site deferred to the Commonwealth of Virginia Petroleum Underground Storage Tank Program).

The primary focus of this SMP is to present the near-term activities and milestones associated with the open ERP sites discussed in detail within **Section 3**, Open Installation Restoration Program Sites, and **Section 4**, Open Munitions Response Sites. For continuity within the MCBQ ERP and to assist the QPMT with legacy information for all sites, the closed and deferred sites are also identified and summarized in **Appendix A** (Closed and Deferred Installation Restoration Program Sites) and **Appendix B** (Closed and Deferred Munition Response Program Sites).

Table 2-1 presents a master table of all the ERP sites identified for MCBQ and the current status. In addition, the appropriate section within the SMP is identified to allow the reader to more quickly go to the site of interest. As presented in **Table 2-1** and summarized below, 304 ERP sites have been identified at MCBQ and there are currently 26 open ERP sites (consisting of 7 IRP sites and 19 MRP sites):

Category	Number of Sites	Explanation
Total ERP Sites	304	Number of ERP sites including IRP and MRP sites (open, closed, and deferred)
Total IRP Sites	262	Number of IRP sites (open, closed, and deferred)
Total MRP Sites	42	Number of MRP sites (open, closed, and deferred)
Total Inactive ERP Sites	278	Number of ERP sites including IRP and MRP sites that are closed or deferred to other programs
Total Inactive IRP Sites	255	Number of IRP sites that are closed or deferred to other programs
Total Inactive MRP Sites	23	Number of MRP sites that are closed or deferred to other programs
Total Closed ERP Sites	232	Number of ERP sites including IRP and MRP sites that are closed
Total Deferred ERP Sites	46	Number of ERP sites including IRP and MRP sites that are deferred to other programs
Total Open ERP Sites	26	Number of ERP sites including IRP and MRP sites that are open
Total Open IRP Sites	7	Number of IRP sites that are open
Total Open MRP Sites	19	Number of MRP sites that are open

Note:

- ¹ The number of IRP sites is based on an estimation of all “sites” including AOCs, site screening process sites, solid waste management units (SWMUs), and other geographic areas historically identified and evaluated and/or investigated through the ERP. This number does not attempt to reflect the formal identification and tracking of IRP sites through the Navy “Normalization of Data” Database.

The 26 open ERP sites consist of the following sites as detailed in **Sections 3** and **4**:

- **Site 04 (OU 4)** – Old Landfill, Defense Reutilization and Marketing Office (DRMO) Scrapyard, and Building 669

- Site 95 (OU 19) – Building 2101 Paint Booth Sump
- Site 99 (OU 12) – Quantico Embayment
- Site 100 (OU 13) – Chopawamsic Creek
- Site 102 (OU 23) – Abraham’s Creek
- Site 104 (OU 21) – Building 2113 Underground Tank Loading/Unloading Area
- Site 105 (OU 38) – Soil Areas
- UXO 001 – Little Creek Skeet Range
- UXO 013A (OU 24) – 81-millimeter (mm) Mortar Range (Impact Area)
- UXO 013B (OU 30) – 81-mm Mortar Range (Firing Fan)
- UXO 013C – 81-mm Mortar Range (Firing Point K2)
- UXO 013D – 81-mm Mortar Range (Firing Point K3)
- UXO 018 (OU 37) – Marine Corps Flying Field Bombing Target No. 5
- UXO 019 (OU 31) – Grenade Field
- UXO 021 (OU 32) – Combat Area C Field Firing Range
- UXO 024 – Combat Area E Field Firing Range
- UXO 025 (OU 33) – Quantico Clubs
- UXO 026 (OU 34) – Chopawamsic Creek Skeet Range No. 1
- UXO 028 – Marine Corps Exchange
- UXO 033 (OU 29) – FBI Training Area 8
- UXO 034 (OU 27) – Lunga Recreation Area South
- UXO 035 (OU 39) – Lunga Reservoir
- UXO 036 (OU 40) – Grenade Pit
- UXO 037 (OU 41) – Chopawamsic Creek Range Fans
- UXO 038 (OU 35) – Lunga Recreation Area Central
- UXO 039 (OU 36) – Lunga Recreation Area North

The identification and prioritization procedures historically applied to the IRP and MRP sites are presented in **Sections 2.1 and 2.2**. The purpose of these sections is to identify the major sources, documents, and site screening procedures used to identify the population of ERP sites at MCBQ. The application of these sources and screening procedures on a site-by-site basis is explained in **Sections 3 and 4** (for the Open Sites) and **Appendixes A and B** (for the Closed Sites), respectively.

2.1 Installation Restoration Program Site Identification and Prioritization Sources

The origination of the IRP sites for MCBQ came from two sources: (1) FFA (EPA, 1998), and (2) Site added by the QPMT after the FFA was effective (February 4, 1999).

2.1.1 Installation Restoration Program Site Identification from Federal Facility Agreement

A total of 246 of the 262 IRP sites originated from the FFA completed in 1998 (EPA, 1998). Appendixes A through D and Appendix F of the FFA identified the distribution of the 246 sites based on the following categorization:

- FFA Appendix A (OUs) – A total of 5 OUs were identified pertaining to 12 sites as identified in **Table 2-1**. An OU was defined as a discrete portion of a remedial response that manages migration or eliminates or mitigates a release or pathway of exposure.⁸

⁸ Additional OUs have been added to the MCBQ ERP after the FFA; a total of 37 OUs have been established by EPA as identified in Table 2-1.

- FFA Appendix B (Site Screening Areas) – A total of 10 sites were identified. Site Screening Areas were defined as those geographical areas with suspected contamination that will require some level of investigation under the CERCLA program through a Site Screening Process (SSP).
- FFA Appendix C (Desktop Audit [DTA] Areas of Concern [AOCs] with Sampling [DTAWS]) – A total of 79 sites⁹ were identified. DTAs were identified in addition to limited sampling for this group of sites.
- FFA Appendix D (DTA AOCs) – A total of 111 sites were identified. DTAs were identified for these sites; no sampling was specified for this group of sites within the FFA.
- FFA Appendix F (Deferred Sites) – A total of 34 sites¹⁰ were identified for deferral to other regulatory programs and excluded from coverage under the FFA. The primary regulatory programs deferred to consisted of the VDEQ Petroleum Underground Storage Tank Program, National Pollutant Discharge Elimination Program, and the Commonwealth of Virginia Solid Waste Disposal Program.

Identification of the IRP sites in the FFA was based on information in the following studies:

- Initial Assessment Study (IAS) – This study was completed in March 1984 for the MCBQ by Fred C. Hart Associates, Inc. (NEESA, 1984). The purpose of the IAS was to identify and assess sites that posed a potential threat to human health or the environment as a result of residual contamination from past hazardous material operations.
- Resource Conservation and Recovery Act Facility Assessment (RFA) – In June 1988, EPA completed a Preliminary Review of available file documents pertaining to environmental sites within the MCBQ. The sources of the documents included those available from EPA Region 3, located in Philadelphia, Pennsylvania; the VDEQ (formerly the Virginia Department of Waste Management) office in Richmond, Virginia; and the MCBQ. The results of the Preliminary Review were included in the Phase I RFA Report, prepared by A.T. Kearney, Inc. under subcontract to EPA (A.T. Kearney, Inc., 1989a). The Phase I RFA was used as the basis for planning and conducting the Visual Site Inspection of the facility in July 1988.
- The Phase II RFA report (A.T. Kearney, Inc., 1989b) updated the information presented in the Phase I RFA and incorporated the results of the Preliminary Review and Visual Site Inspection. The Phase II RFA was revised in March 1989.
- In August 1990, the Virginia Department of Waste Management contacted the MCBQ and requested additional information on specific SWMUs identified in the RFA. As a result of that request, Geophex, Ltd. prepared and implemented an investigation of those SWMUs. The results of that investigation were presented in a report dated January 22, 1992 (Geophex, 1992).
- Environmental Photographic Interpretation Center – The MCBQ was proposed for the NPL on May 10, 1993. As a result of the proposed listing, EPA's Environmental Photographic Interpretation Center initiated an analysis of current and historical aerial photography covering the MCBQ. These sites are designated as Aerial Photographic Survey (APS) sites. Photography from 1937 to 1993 was analyzed to aid in the assessment of past waste disposal practices. The analysis included photo-verification of activities at existing IR sites, as well as the identification of new sites of concern.

⁹ Appendix C of the FFA only lists 78 sites; however, Sites L-26 and APS-20 (considered the same site) are identified as separate entries for the purpose of this SMP consistent with previous SMPs. Therefore, the total number of sites used herein is 79.

¹⁰ Appendix F of the FFA only lists 33 sites; however, Sites L-5 and APS-2D (considered the same site) are identified as separate entries for the purpose of this SMP consistent with previous SMPs. Therefore, the total number of sites used herein is 34.

The FFA also included two additional sites, Former Rifle Range (Site 20; SWMU L-37) and Pesticide Control Building (Site 32; SWMU B-10), that were not identified during the aforementioned studies. As established from the RFA, the IRP sites within the FFA were divided into 13 categories based on unit type and function and are denoted by one to three letters followed by a number. These categories consist of:

L-	Land-based units	T-	Trenches
B-	Waste storage buildings	O-	Oil/water separators
CA-	Container accumulation areas	TA-	Waste storage tanks
BA-	Battery accumulation areas	TP-	Sewage treatment plants
D-	Dry paint booths	M-	Miscellaneous units
W-	Wash racks	AOC-	Areas of Concern
APS-	Aerial Photographic Survey		

Additional detail from these studies is provided on a site-specific basis in **Sections 3 and 4** (for the Open Sites) and **Appendixes A and B** (for the Closed Sites).

2.1.2 Installation Restoration Program Sites added by the Quantico Project Managers Team

Sixteen additional sites not identified in the FFA were added to the list of IRP sites by the QPMT consisting of the following sites:

- Site 96 (OU 10) – Old Landfill Southern Wetlands
- Site 97 – Creosote Site
- Site 98 (OU 20) – Golf Course Maintenance Area
- Larson’s Gym Outfall (Storm Sewer Outfall No. 8)
- Storm Sewer Outfall No. 16
- Storm Sewer Outfall No. 30
- New Fire Training Area (near the Old Batch Plant)
- Site 99 (OU 12) – Quantico Embayment
- Site 105 (OU 38) – Soil Areas
- Site 100 (OU 13) – Chopawamsic Creek
- Quantico Creek/Little Creek
- Site 101 – Potomac River
- Site 102 (OU 23) – Abraham’s Creek
- Arsenic Burial Area No. 2
- Asbestos Burial Area No. 2
- Merrimac Disposal Area

2.1.3 Installation Restoration Program Site Prioritization

During preparation of the 1995-1996 SMP (HNUS, 1995), a scoring system was developed to rank the potential severity of each IRP in an effort to prioritize the sites for further study. A brief summary of the previous scoring system is provided in **Section 2.1.3.1**.

A modified site scoring system, described in IRP Consensus Agreement No. 4, was developed for MCBQ by the QPMT. Because funds have been readily available for the completion of IRP investigations to date, the QPMT has not found it necessary to utilize the modified scoring system. If future funding becomes an issue, the modified system will be used to reprioritize IR sites recommended for further investigation as a result of the completion of

a DTA, DTAWS, SSP, or other phases of RIs. **Section 2.1.3.2** summarizes how IRP sites listed in this SMP will be re-evaluated and scored following the completion of a DTA, DTAWS, SSP, or other phases of RIs.

Any revision or reapplication of the scoring system identified herein for IRP sites will be based on request and agreement from the QPMT.

Previous Scoring System

The scoring system for the prioritization of IRP sites was last applied in 1995 during the 1995-1996 SMP (HNUS, 1995); the results of this scoring are presented in **Appendix C**. The scoring system was based on EPA's Hazard Ranking System (HRS) (40 Code of Federal Register [CFR] Part 300). Five rating factors were used to evaluate the IRP sites:

- Observed Release (0 or 45)
- Accessibility (1 - 3)
- Contaminant Transport (1 - 5)
- Waste Characteristics (1 - 5)
- Target Populations (1 - 5)

These factors were combined to arrive at a Total Score for each site. For the Observed Release factor, if there was direct evidence of the release of a substance of concern to the ground surface or to a surface water body, a score of 45 was assigned. In this case, the Accessibility and Contaminant Transport factors were not numerically evaluated in the Total Score. When reasonable evidence of an observed release was lacking, a 0 was assigned to the Observed Release factor and the Accessibility and Contaminant Transport factors were evaluated in the Total Score.

The Accessibility factor was used to evaluate the various means by which access to the site by human receptors may be limited. Because all sites are within the boundaries of MCBQ, the accessibility scoring was divided into three categories: restricted area (score = 1), unrestricted area (score = 2), and residential/recreational areas (score = 3).

Contaminant Transport was used to evaluate the potential for migration in the environment, as well as the potential for immediate dermal contact to the substances of concern. A value of 5 was given to sites such as uncovered waste piles, leaking containers, or open area releases. A value of 1 was given to sites such as secured drums staged on a bermed apron.

In determining the Waste Characteristics score, the known or expected constituent toxicity and environmental persistence were combined for a composite score. The scale ranged from a value of 1, which includes compounds such as grease and heavy oils, to a value of 5, which includes compounds (for example, chlorinated solvents, polychlorinated biphenyls [PCBs], lead, pesticides). A summary of the chemical-specific values used to rank the sites is provided in **Appendix D**.

Factors considered under Targets included the distance to sensitive environments, potential populations affected, and zoning/land use. Special considerations were given to sites that could immediately impact the Potomac River or surface water bodies known to be a source of public water.

As per the HRS scoring methodology, the Total Score was calculated based on one of two possible scenarios:

1. If an Observed Release was confirmed, the Total Score was calculated by multiplying the individual scores for Observed Release, Waste Characteristics, and Targets.
2. If an Observed Release could not be confirmed, the Total Score was calculated by multiplying the individual scores for Accessibility, Contaminant Transport, Waste Characteristics, and Targets.

A weighing system was used to mimic the HRS Direct Contact criteria. Using this scheme, the score for each site was divided by the highest possible Total Score (20,250) and then multiplied by 100 so that all scores fall within the range of 1 to 100.

Modified Scoring System

Information obtained during the DTA, DTAWS, SSP, or other phases of RIs will be used to re-evaluate the five rating factors defined under the previous scoring system. During these investigations, additional information (reports, data, etc.) that was not available when the IRP sites were originally ranked for the 1995-1996 SMP will be obtained. Therefore, the site scores will be updated to reflect current available information for the IRP sites. Since environmental data will be collected under DTAWS, SSP, or other phases of RIs, additional rating factors will be used to assess the potential for human health and ecological risks.

The worksheet used to calculate modified site scores and the methodology used to re-rank the IRP sites is provided in **Appendix E**.

2.2 Munition Response Site Identification and Prioritization Sources

A total of 42 MRSs are identified for MCBQ within **Table 2-1**. The MRP addresses response actions at MRSs where munitions and explosives of concern (MEC) and MC are present in the environment. Areas where previous military-related activities (for example, live-fire training and testing; disposal operations) were conducted are designated as MRSs. An MRS under the MRP is defined as a discrete location within a Munitions Response Area that is known to require a munitions response. A Munitions Response Area comprises one or more MRSs. Only those ranges designated as other-than-operational are included within the MRP which includes closed, transferred, and transferring ranges, and other sites not on operational ranges.

MRSs have been identified at MCBQ on both the Mainside and Guadalcanal sections as summarized in **Sections 2.2.1 and 2.2.2**.

2.2.1 Mainside Munition Response Site Identification

Thirty-five of the MRSs are located on the Mainside section of MCBQ as identified in **Table 2-1**. The MRSs were primarily identified based on the Range Identification and Preliminary Assessment Report (USACE, 2001a) and Archives Search Report (ASR) (USACE, 2001b) for MCBQ. These reports identify active and inactive training areas, ranges, and ammunition and explosive storage areas at MCBQ since its inception in 1917. Active training ranges, indoor ranges, and munitions storage areas were eliminated from consideration as an MRS because they do not meet the eligibility requirements (**Section 1.2**). Approval to investigate the Mainside MRP sites was received from the Marine Corps Training and Education Command (TECOM) and MARCORSYSCOM. TECOM was engaged to approve the addition of the MRSs to the MRP as the managing entity for all ranges for the Marine Corps. MARCORSYSCOM oversees all aspects of explosives safety for the MRP on Marine Corps facilities.

The following four additional MRSs, not identified in the ASR or the Range Identification and PA Report, were added to the list of MRSs on the Mainside:

- UXO 025 (OU 33) – Quantico Clubs
- UXO 026 (OU 34) – Chopawamsic Skeet Range No. 1
- UXO 028 – Marine Corps Exchange
- UXO 029 – Chopawamsic Skeet Range No. 2

2.2.2 Guadalcanal Area Munition Response Site Identification

A total of seven MRSs are identified in the Guadalcanal Area of MCBQ as identified on **Table 2-1** and listed below:

- UXO 031 (OU 28) – Camp Barrett Training Areas 5 and 8
- UXO 033 (OU 29) – FBI Training Area 8
- UXO 034 (OU 27) – Lunga Recreation Area South
- UXO 035 (OU 39) – Lunga Reservoir

- UXO 036 (OU 40) – Grenade Pit
- UXO 038 (OU 35) – Lunga Recreation Area Central
- UXO 039 (OU 36) – Lunga Recreation Area North

Although most of the Guadalcanal Area is considered to be an active range, the Navy has identified these MRSs located in areas that are not set aside, managed, and used for range activities. Approval to investigate the Guadalcanal MRP sites was received from the TECOM and MARCORSYSCOM. The primary source used for the identification of these MRSs was the PA Report and the ASR.

2.2.3 Munitions Response Site Prioritization

As part of the remedial process, the Navy implemented the MRSP in accordance with 32 CFR Section 179. The MRSP is a methodology that uses available data to prioritize site response actions. It is not a full-scale risk assessment (as is conducted during the RI/FS phases) and does not require environmental sampling or geophysical surveys to be effective. The protocol is used for assigning a relative priority to each MRS for response activities related to MEC based on the overall conditions at the site (Navy, 2018).

Three risk evaluation modules are used to evaluate the relative risk:

- Explosive Hazard Evaluation Module – Evaluates risk posed by MEC
- Chemical Warfare Material Hazard Evaluation Module – Evaluates risk associated with the physiological effects of chemical warfare material
- Health Hazard Evaluation Module – Evaluates risk to human health and the environment from MC

The results of the evaluation include a hazard evaluation rating for each of the three modules. The ratings range from “A” to “G” with “A” representing the highest risk and “G” the lowest. The MRS priority is based on the module with the highest risk rating. For each of the three modules, the hazard evaluation rating has a corresponding numerical priority, with the lowest number indicating the highest priority. The numerical priorities range from 2 to 8 for the Explosive Hazard Evaluation Module and Health Hazard Evaluation modules, and from 1 to 7 for the Chemical Warfare Module. This protocol is used to rank MRSs on a national level (that is, across all DoD installations), as well as providing a priority for response actions at MCBQ.

The results of the MRSP ranking as provided by the Navy are provided in **Appendix F. Appendix G** contains a listing of MRP-related terminology.

Table 2-1. Master Table of Environmental Restoration Program Sites
Fiscal Year 2020 Site Management Plan
Marine Corps Base Quantico, Quantico, Virginia

Site Identification Number	FFA/SMP Designation	OU	Site Name	IRP Site or MRS	Site Status	Mainside or Guadalcanal Section	Report Section
Site 04	L-02	04	Old Landfill	IRP	Open	Mainside	3.1
	L-03		Defense Reutilization and Marketing Office Scrapyard	IRP			
	Building 08		Building 669	IRP			
Site 95	M-27	19	Building 2101 Paint Booth Sump	IRP	Open	Mainside	3.2
Site 99	-	12	Quantico Embayment	IRP	Open	Mainside	3.3
Site 100	-	13	Chopawamsic Creek	IRP	Open	Mainside	3.4
Site 102	-	23	Abraham's Creek	IRP	Open	Mainside	3.5
Site 104	M-13	21	Building 2113 Underground Tank Loading/Unloading Area	IRP	Open	Mainside	3.6
Site 105	-	38	Soil Areas	IRP	Open	Mainside	3.7
UXO 001	-	-	Little Creek Skeet Range	MRS	Open	Mainside	4.1
UXO 013 A	-	24	81mm Mortar Range - Impact Area	MRS	Open	Mainside	4.2.1
UXO 013 B	-	30	81mm Mortar Range - Firing Fan	MRS	Open	Mainside	4.2.2
UXO 013 C	-	-	81mm Mortar Range - Firing Point K2	MRS	Open	Mainside	4.2.3
UXO 013 D	-	-	81mm Mortar Range - Firing Point K3	MRS	Open	Mainside	4.2.4
UXO 018	-	37	Marine Corps Flying Field Bombing Targets	MRS	Open	Mainside	4.3
UXO 019	-	31	Grenade Field	MRS	Open	Mainside	4.4
UXO 021	-	32	Combat Area C Field Firing Range	MRS	Open	Mainside	4.5
UXO 024	-	-	Combat Area E Field Firing Range	MRS	Open	Mainside	4.6
UXO 025	-	33	Quantico Clubs	MRS	Open	Mainside	4.7
UXO 026	-	34	Chopawamsic Creek Skeet Range No. 1	MRS	Open	Mainside	4.8
UXO 028	-	-	Marine Corps Exchange	MRS	Open	Mainside	4.9
UXO 033	-	29	Federal Bureau of Investigation Training Area 8	MRS	Open	Guadalcanal	4.10
UXO 034	-	27	Lunga Recreation Area South	MRS	Open	Guadalcanal	4.11
UXO 035	-	39	Lunga Reservoir	MRS	Open	Guadalcanal	4.12
UXO 036	-	40	Grenade Pit	MRS	Open	Guadalcanal	4.13
UXO 037	-	41	Chopawamsic Creek Range Fans	MRS	Open	Mainside	4.14
UXO 038	-	35	Lunga Recreation Area Central	MRS	Open	Guadalcanal	4.15
UXO 039	-	36	Lunga Recreation Area North	MRS	Open	Guadalcanal	4.16
Site 49	APS-01	-	Engineering Test Site Fill Areas	IRP	Closed	Mainside	A.1.1
Site 22	APS-02A	-	Previous Burn Pits	IRP	Closed	Mainside	A.1.2
-	APS-02B	-	Runway 20 Fill Area	IRP	Closed	Mainside	A.1.3
Site 23	APS-02C	-	Interim Burn Pit and Fill Area	IRP	Closed	Mainside	A.1.4
-	APS-02D	-	Fire Training Area	IRP	Closed	Mainside	A.1.5
-	APS-04A	-	Ammo Storage Facility Cleared Area	IRP	Closed	Guadalcanal	A.1.6
-	APS-04B	-	Ammo Storage Facility Disturbed Ground	IRP	Closed	Guadalcanal	A.1.7
-	APS-05	-	Route 637 Clear Cut	IRP	Closed	Guadalcanal	A.1.8
Site 52	APS-06A	-	Russell Road Waste Disposal Area	IRP	Closed	Guadalcanal	A.1.9
-	APS-06B	-	Russell Road Clear Cut	IRP	Closed	Guadalcanal	A.1.10
Site 21	APS-07	17	Smith Lake Road Cleared Area	IRP	Closed	Guadalcanal	A.1.11
-	APS-08	-	Federal Bureau of Investigation Academy Cleared Area	IRP	Closed	Guadalcanal	A.1.12
-	APS-09	-	Landing Zone Ostrich Cleared Area	IRP	Closed	Guadalcanal	A.1.13
Site 24	APS-10	-	Guadalcanal Maintenance Disposal Area	IRP	Closed	Guadalcanal	A.1.14
Site 33	APS-11	11	The Basic School Northwest Training Area	IRP	Closed	Guadalcanal	A.1.15
-	APS-12	-	The Basic School Southern Cleared Area	IRP	Closed	Guadalcanal	A.1.16
-	APS-13	-	Training Area 9B Northern Cleared Area	IRP	Closed	Guadalcanal	A.1.17
Site 25	APS-14	-	Range 8 Cleared Area	IRP	Closed	Guadalcanal	A.1.18
-	APS-17	-	Route 608 Cleared Area	IRP	Closed	Guadalcanal	A.1.19
-	APS-18	-	Shooting Range Disposal Area	IRP	Closed	Guadalcanal	A.1.20
-	APS-19	-	Camp Goettge Northwest Cleared Area	IRP	Closed	Guadalcanal	A.1.21
Site 26	APS-20	-	Camp Goettge South Disposal Area	IRP	Closed	Guadalcanal	A.1.22
Site 51	APS-21	-	Landing Zone Woodpecker Cleared Area	IRP	Closed	Guadalcanal	A.1.23
-	AOC-A	-	Storage Tanks	IRP	Deferred	No Specific Location	A.2.1

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Marine Corps Base Quantico, Quantico, Virginia

Site Identification Number	FFA/SMP Designation	OU	Site Name	IRP Site or MRS	Site Status	Mainside or Guadalcanal Section	Report Section
Site 55	AOC-B	-	Building 3252 Stressed Area	IRP	Closed	Mainside	A.2.2
-	AOC-C	-	Building 4 East Apron	IRP	Closed	Mainside	A.2.3
-	AOC-D	-	Building 2113 Fuel Oil Tank Storage Area	IRP	Closed	Mainside	A.2.4
-	AOC-E	-	Building 27002 Product Drum Storage Area	IRP	Deferred	Guadalcanal	A.2.5
Site 56	AOC-F	-	Building 27054 Stained Area	IRP	Closed	Guadalcanal	A.2.6
Site 57	AOC-G	-	Building 27054 Lube Oil Storage Area	IRP	Closed	Guadalcanal	A.2.7
Site 58	AOC-H	-	Building 2208 Stained Area	IRP	Closed	Mainside	A.2.8
-	AOC-I	-	Building 3066 Diesel Fuel Tank Stain Area	IRP	Deferred	Mainside	A.2.9
Site 48	AOC-J	-	Building 3254 Stained Area	IRP	Closed	Mainside	A.2.10
-	AOC-K	-	Septic Tanks	IRP	Closed	No Specific Location	A.2.11
-	Building 01	-	Hazardous Waste Storage Building 2141	IRP	Deferred	Mainside	A.3.1
-	Building 02	-	Building 27401	IRP	Deferred	Guadalcanal	A.3.2
Site 59	Building 03	-	Building 2191	IRP	Closed	Mainside	A.3.3
-	Building 04	-	Building 2142	IRP	Closed	Mainside	A.3.4
-	Building 05	-	Building 3254	IRP	Closed	Mainside	A.3.5
-	Building 06	-	Building 2091	IRP	Closed	Mainside	A.3.6
-	Building 07	05	Building 3218	IRP	Closed	Mainside	A.3.7
-	Building 09	-	Building 3037	IRP	Closed	Mainside	A.3.8
Site 32	Building 10	09	Pesticide Control Building	IRP	Closed	Mainside	A.3.9
Site 68	BA-01	-	Building 27054 Battery Work Area	IRP	Closed	Guadalcanal	A.4.1
-	BA-02	-	Building 2013 Battery Workshop/Area	IRP	Closed	Mainside	A.4.2
-	BA-03	-	Building 24009 Battery Workshop	IRP	Closed	Guadalcanal	A.4.3
-	BA-04	-	Building 2112 Battery Workshop	IRP	Closed	Mainside	A.4.4
-	BA-05	-	Building 3230 Battery Workshop	IRP	Closed	Mainside	A.4.5
-	BA-06	-	Building 24009 Battery Accumulation Area No. 1	IRP	Closed	Guadalcanal	A.4.6
-	BA-07	-	Building 24009 Battery Accumulation Area No. 2	IRP	Closed	Guadalcanal	A.4.7
-	BA-08	-	Building 3063 Battery Accumulation Area	IRP	Closed	Mainside	A.4.8
-	BA-09	-	Building 28004 Battery Accumulation Area	IRP	Closed	Mainside	A.4.9
-	BA-10	-	Building 2013 Battery Accumulation Area	IRP	Closed	Mainside	A.4.10
-	BA-11	-	Building 10 Battery Accumulation Area	IRP	Closed	Guadalcanal	A.4.11
-	BA-12	-	Building 2112 Battery Accumulation Area	IRP	Closed	Mainside	A.4.12
-	BA-13	-	Building 3066 Battery Accumulation Area	IRP	Closed	Mainside	A.4.13
Site 70	CA-01	-	Building 27002 Accumulation Area	IRP	Closed	Guadalcanal	A.5.1
Site 60	CA-02	-	Building 27054 Accumulation Area No. 1	IRP	Closed	Guadalcanal	A.5.2
Site 61	CA-03	-	Building 27054 Accumulation Area No. 2	IRP	Closed	Guadalcanal	A.5.3
Site 62	CA-04	-	Building 27054 Accumulation Area No. 3	IRP	Closed	Guadalcanal	A.5.4
Site 63	CA-05	-	Building 27054 Accumulation Area No. 4	IRP	Closed	Guadalcanal	A.5.5
Site 64	CA-06	-	Building 24009 Accumulation Area No. 1	IRP	Closed	Guadalcanal	A.5.6
Site 65	CA-07	-	Building 24009 Accumulation Area No. 2	IRP	Closed	Guadalcanal	A.5.7
Site 66	CA-08	-	Building 24009 Accumulation Area No. 3	IRP	Closed	Guadalcanal	A.5.8
Site 67	CA-09	-	Building 24009 Accumulation Area No. 4	IRP	Deferred	Guadalcanal	A.5.9
Site 54	CA-10	-	Building 24007 Accumulation Area No. 1	IRP	Closed	Guadalcanal	A.5.10
-	CA-11	-	Building 27241 Accumulation Area	IRP	Closed	Guadalcanal	A.5.11
Site 43	CA-12	-	Building 27214 Accumulation Area	IRP	Closed	Guadalcanal	A.5.12
-	CA-13	-	Building 27942 Accumulation Area (Federal Bureau of Investigation)	IRP	Closed	Guadalcanal	A.5.13
-	CA-14	-	Building 27956 Accumulation Area	IRP	Closed	Guadalcanal	A.5.14
-	CA-15	-	Building 10 Accumulation Area	IRP	Closed	Guadalcanal	A.5.15
Site 34	CA-16	18	Building 4 Accumulation Area	IRP	Closed	Mainside	A.5.16
Site 47	CA-17	-	Building 3230 Accumulation Area	IRP	Closed	Mainside	A.5.17
-	CA-18	-	Building 2112 Accumulation Area No. 1	IRP	Closed	Mainside	A.5.18
-	CA-19	-	Building 2112 Accumulation Area No. 2	IRP	Closed	Mainside	A.5.19
Site 40	CA-20	-	Building 2130 Accumulation Area	IRP	Closed	Mainside	A.5.20
Site 50	CA-21	-	Building 2101 Accumulation Area No. 1	IRP	Closed	Mainside	A.5.21
Site 45	CA-22	-	Building 2101 Accumulation Area No. 2	IRP	Closed	Mainside	A.5.22

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Marine Corps Base Quantico, Quantico, Virginia

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Site 44	CA-23	-	Building 2103 Accumulation Area	IRP	Closed	Mainside	A.5.23
Site 71	CA-24	-	Building 5107 Accumulation Area	IRP	Closed	Mainside	A.5.24
Site 42	CA-25	-	Mainside Sewage Treatment Plant Accumulation Area	IRP	Closed	Mainside	A.5.25
-	CA-26	-	Building 663 Accumulation Area	IRP	Deferred	Mainside	A.5.26
Site 41	CA-27	-	Camp Upshur Sewage Treatment Plant Accumulation Area	IRP	Closed	Guadalcanal	A.5.27
Site 39	CA-28	-	Building 28000 Accumulation Area No. 1	IRP	Closed	Mainside	A.5.28
Site 46	CA-29	-	Building 28000 Accumulation Area No. 2	IRP	Closed	Mainside	A.5.29
Site 72	CA-30	-	Building 28000 Accumulation Area No. 3	IRP	Closed	Mainside	A.5.30
Site 73	CA-31	-	Building 3254 Accumulation Area	IRP	Deferred	Mainside	A.5.31
Site 69	CA-32	-	Building 3252 Paint Shop Accumulation Area	IRP	Closed	Mainside	A.5.32
Site 35	CA-33	-	Building 2208 Accumulation Area	IRP	Closed	Mainside	A.5.33
Site 38	CA-34	-	Building 3066 Accumulation Area	IRP	Closed	Mainside	A.5.34
Site 74	CA-35	-	Building 2013 Accumulation Area No. 1	IRP	Closed	Mainside	A.5.35
Site 75	CA-36	-	Building 2013 Accumulation Area No. 2	IRP	Closed	Mainside	A.5.36
-	CA-37	-	Building 2008 Accumulation Area	IRP	Closed	Mainside	A.5.37
Site 36	CA-38	-	Building 2006A Accumulation Area	IRP	Closed	Mainside	A.5.38
-	CA-39	-	Building 3035 Accumulation Area	IRP	Closed	Mainside	A.5.39
Site 76	CA-40	-	Building 2113 Accumulation Area No. 1	IRP	Closed	Mainside	A.5.40
Site 77	CA-41	-	Building 2113 Accumulation Area No. 2	IRP	Closed	Mainside	A.5.41
-	CA-42	-	Building 3045 Accumulation Area	IRP	Closed	Mainside	A.5.42
Site 78	CA-43	-	Building 3034 Accumulation Area	IRP	Closed	Mainside	A.5.43
Site 79	CA-44	-	Building 2013 Accumulation Area No. 3	IRP	Closed	Mainside	A.5.44
Site 37	CA-45	-	Murphy Demo Accumulation Area	IRP	Closed	Guadalcanal	A.5.45
-	CA-46	-	Building 24007 Accumulation Area No. 2	IRP	Closed	Guadalcanal	A.5.46
Site 80	CA-47	-	Building 24006 Accumulation Area	IRP	Deferred	Guadalcanal	A.5.47
Site 81	CA-48	-	Building 24162 Accumulation Area	IRP	Closed	Guadalcanal	A.5.48
-	CA-49	-	Building 5-9 Accumulation Area	IRP	Closed	Guadalcanal	A.5.49
-	CA-50	-	The Basic School Gas Station Accumulation Area	IRP	Closed	Guadalcanal	A.5.50
-	CA-51	-	Mainside Gas Station Accumulation Area	IRP	Closed	Mainside	A.5.51
-	D-01	-	TSSU Dry Paint Booth	IRP	Closed	Guadalcanal	A.6.1
-	D-04	-	Building 2103 Dry Paint Booth	IRP		Mainside	
-	D-02	-	Building 4 Dry Paint Booth	IRP	Closed	Mainside	A.6.2
-	D-03	-	Building 2101 Dry Paint Booth	IRP	Closed	Mainside	A.6.3
-	D-05	-	Building 2013 Dry Paint Booth No. 1	IRP	Closed	Mainside	A.6.4
	D-06	-	Building 2013 Dry Paint Booth No. 2	IRP		Mainside	
Site 01	L-01	01	Pesticide Burial Area	IRP	Closed	Guadalcanal	A.7.1
Site 05	L-04	05	Old Batch Plant	IRP	Closed	Mainside	A.7.2
Site 82	L-04a	-	Old Batch Plant Auxiliary Site	IRP	Closed	Mainside	A.7.3
Site 83	L-04b	-	Old Batch Plant Auxiliary Site	IRP	Closed	Mainside	
Site 84	L-04c	-	Old Batch Plant Auxiliary Site	IRP	Closed	Mainside	
-	L-04d	-	Old Batch Plant Auxiliary Site	IRP	Closed	Mainside	
-	L-04e	-	Old Batch Plant Auxiliary Site	IRP	Closed	Mainside	
-	L-04f	-	Old Batch Plant Auxiliary Site	IRP	Closed	Mainside	
-	L-04g	-	Old Batch Plant Auxiliary Site	IRP	Closed	Mainside	
-	L-04h	-	Old Batch Plant Auxiliary Site	IRP	Closed	Mainside	
Site 85	L-04i	-	Old Batch Plant Auxiliary Site	IRP	Closed	Mainside	
Site 86	L-04j	-	Old Batch Plant Auxiliary Site	IRP	Closed	Mainside	
-	L-04k	-	Old Batch Plant Auxiliary Site	IRP	Closed	Mainside	
Site 07	L-05	-	Recently Closed Landfill	IRP	Deferred	Guadalcanal	A.7.4
Site 17	L-06	07	Arsenic Burial Area	IRP	Closed	Mainside	A.7.5
Site 18	L-07	06	Aero Club	IRP	Deferred	Mainside	A.7.6
Site 19	L-08	03	Fire Training Area / APS-02D	IRP	Deferred	Mainside	A.7.7
Site 13	L-09	-	Battery Acid Disposal Area (CER Battery Area)	IRP	Deferred	Guadalcanal	A.7.8
Site 06	L-10	-	Underground Fuel Storage Area (Brown Field)	IRP	Deferred	Mainside	A.7.9

Table 2-1. Master Table of Environmental Restoration Program Sites
Fiscal Year 2020 Site Management Plan
Marine Corps Base Quantico, Quantico, Virginia

Site Identification Number	FFA/SMP Designation	OU	Site Name	IRP Site or MRS	Site Status	Mainside or Guadalcanal Section	Report Section
Site 87	L-11	-	Building 3252 Temporary Waste Storage Area	IRP	Closed	Mainside	A.7.10
-	L-12	-	New Burn Pit	IRP	Closed	Mainside	A.7.11
-	L-13	-	Open Burning/Open Detonation Area (Charlie Demo)	IRP	Deferred	Guadalcanal	A.7.12
-	L-14	-	Murphy Demolition Area	IRP	Deferred	Guadalcanal	A.7.13
-	L-15	-	T-58 Engine Test Pad	IRP	Closed	Mainside	A.7.14
-	L-16	-	Quantico Sanitary Landfill	IRP	Deferred	Guadalcanal	A.7.15
-	L-17	01	Building 2427 Burn Area	IRP	Closed	Guadalcanal	A.7.16
-	L-18	01	Building 2427 Disposal Area	IRP	Closed	Guadalcanal	A.7.17
-	L-19	-	Quantico Sanitary Landfill Burn Area	IRP	Deferred	Guadalcanal	A.7.18
-	L-20	-	Quantico Asbestos Disposal Area	IRP	Deferred	Guadalcanal	A.7.19
Site 03	L-21	-	Dihydrate Burial Area	IRP	Closed	Guadalcanal	A.7.20
Site 02	L-22	-	Asbestos Burial Area	IRP	Deferred	Guadalcanal	A.7.21
Site 10	L-23	22	Camp Upshur Disposal Area	IRP	Closed	Guadalcanal	A.7.22
Site 08	L-24	15	Camp Barrett Disposal Area	IRP	Closed	Guadalcanal	A.7.23
-	L-25	-	Camp Goettge	IRP	Closed	Guadalcanal	A.7.24
Site 26	L-26	-	Camp Goettge South Disposal Area / APS-20	IRP	Closed	Guadalcanal	A.7.25
Site 09	L-27	16	Camp Goettge Disposal Area	IRP	Closed	Guadalcanal	A.7.26
Site 15	L-28	-	Air Station Disposal Area	IRP	Closed	Mainside	A.7.27
Site 11	L-29	-	Rifle Range Disposal Area	IRP	Closed	Guadalcanal	A.7.28
Site 53	L-31	-	Training Area 3 Disposal Area	IRP	Closed	Mainside	A.7.29
Site 14	L-32	-	1920s Landfill	IRP	Closed	Mainside	A.7.30
Site 12	L-33	-	Gravel Pit	IRP	Closed	Mainside	A.7.31
Site 88	L-34	-	Building 27002 Disposal Yard	IRP	Closed	Guadalcanal	A.7.32
-	L-35	-	Building 27002 Disposal Trench	IRP	Closed	Guadalcanal	A.7.33
-	L-36	-	Building 27002 Temporary Storage Area	IRP	Closed	Guadalcanal	A.7.34
Site 20	L-37	02	Former Rifle Range	IRP	Closed	Mainside	A.7.35
Site 31	M-03	-	Building 24006 Rifle Bore Cleaning Area	IRP	Deferred	Guadalcanal	A.8.1
-	M-04	-	The Basic School Gas Station Battery Draining Pit (The Basic School Battery Disposal Site)	IRP	Deferred	Guadalcanal	A.8.2
-	M-05	-	Popping Furnace	IRP	Deferred	Guadalcanal	A.8.3
-	M-06	05	Old Batch Plant Drop Inlet No. 1	IRP	Closed	Mainside	A.8.4
-	M-07		Old Batch Plant Drop Inlet No. 2	IRP	Closed	Mainside	
-	M-08		Old Batch Plant Collection Sump	IRP	Closed	Mainside	
-	M-09		Building 4 Waste Locker No. 1	IRP	Closed	Mainside	
-	M-10	-	Building 4 Waste Locker No. 2	IRP	Closed	Mainside	A.8.5
-	M-11	-	Building 4 Waste Dumpster No. 1	IRP	Closed	Mainside	
-	M-12	-	Building 4 Waste Dumpster No. 2	IRP	Closed	Mainside	A.8.6
-	M-14	-	Old Sludge Drying Bed	IRP	Closed	Mainside	
Site 89	M-15	-	South Coal Yard	IRP	Closed	Mainside	A.8.7
Site 90	M-16	-	North Coal Yard	IRP	Closed	Mainside	
Site 91	M-17	-	Building 28000 Former Drainage Channel	IRP	Closed	Mainside	A.8.8
-	M-18	-	Building 3090 Sink	IRP	Closed	Mainside	A.8.9
-	M-19	-	Building 2205 Pathological Incinerator	IRP	Closed	Mainside	A.8.10
Site 92	M-20	-	Building 3063 Abandoned Degreaser	IRP	Closed	Mainside	A.8.11
Site 93	M-21	-	Building 2113 Collection Sump No. 1	IRP	Closed	Mainside	A.8.12
Site 94	M-22	-	Building 2113 Collection Sump No. 2	IRP	Closed	Mainside	
-	M-23	-	Building 24008 Silver Recovery Unit	IRP	Deferred	Guadalcanal	A.8.13
-	M-24	-	Building 2009 Silver Recovery Unit	IRP	Deferred	Mainside	
-	M-25	-	Old Brown Field Heating Plant Boilers	IRP	Deferred	Mainside	A.8.14
-	M-26	-	Central Heating Plant Boilers	IRP	Deferred	Mainside	
-	M-28	-	Trash Dumpsters	IRP	Deferred	No Specific Location	A.8.15
-	M-29	01	Building 2427 Drum Disposal Area	IRP	Closed	Guadalcanal	A.8.16
-	M-30	-	Building 24009 Settling Pit	IRP	Closed	Guadalcanal	A.8.17
-	M-31	-	Building 24008 Accumulation Area	IRP	Deferred	Guadalcanal	A.8.18
-							A.8.19

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Marine Corps Base Quantico, Quantico, Virginia

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-	M-32	-	TSSU Dust Control System	IRP	Deferred	Guadalcanal	A.8.20
-	M-33	-	Building 2200 Infectious Waste Accumulation Area	IRP	Deferred	Mainside	A.8.21
-	M-34	-	Building 3034 Dust Control System	IRP	Deferred	Mainside	A.8.22
-	M-35	-	Building 2009 Silver Recovery Units Accumulation Area	IRP	Closed	Mainside	A.8.23
-	O-01	-	Building 3045 Oil-Water Separator Separator No. 1	IRP	Closed	Mainside	A.9.1
-	O-02	-	Building 3045 Oil-Water Separator Separator No. 2	IRP	Closed	Mainside	
-	O-03	-	Building 2112 Oil-Water Separator Separator	IRP	Closed	Mainside	A.9.2
-	O-04	-	Building 27263 Oil-Water Separator Separator	IRP	Closed	Guadalcanal	A.9.3
-	O-05	-	Building 28000 Oil-Water Separator Separator	IRP	Deferred	Mainside	A.9.4
-	O-06	-	Building 4 Oil-Water Separator Separator	IRP	Closed	Mainside	A.9.5
-	O-07	-	Building 3220 Oil-Water Separator Separator	IRP	Closed	Mainside	A.9.6
-	O-08	-	Sanitary Landfill Oil-Water Separator Separator	IRP	Closed	Guadalcanal	A.9.7
-	O-09	-	Building 24009 Oil-Water Separator Separator	IRP	Closed	Guadalcanal	A.9.8
-	O-10	-	Building 3400 Oil-Water Separator Separator	IRP	Closed	Mainside	A.9.9
-	O-11	-	Building 24007 Oil-Water Separator Separator	IRP	Closed	Guadalcanal	A.9.10
-	T-01	-	Building 24009 Trench No. 1	IRP	Closed	Guadalcanal	A.10.1
-	T-02	-	Building 24009 Trench No. 2	IRP	Closed	Guadalcanal	A.10.2
-	T-03	-	Building 4 Trench	IRP	Closed	Mainside	A.10.3
-	T-04	-	Building 2112 Trench	IRP	Closed	Mainside	A.10.4
-	T-05	-	Building 2130 Trench	IRP	Closed	Mainside	A.10.5
-	T-06	-	Building 2101 Trench	IRP	Closed	Mainside	A.10.6
-	T-07	-	Building 2103 Trench No. 1	IRP	Closed	Mainside	A.10.7
-	T-08	-	Building 2103 Trench No. 2	IRP	Closed	Mainside	A.10.8
-	T-09	-	Building 3016 Trench	IRP	Closed	Mainside	A.10.9
-	T-10	-	Building 27054 Trench	IRP	Closed	Guadalcanal	A.10.10
-	TA-01	-	Building 2113 Underground Tank	IRP	Closed	Mainside	A.11.1
-	TA-02	-	Building 27054 Tank No. 1	IRP	Closed	Guadalcanal	A.11.2
-	TA-03	-	Building 27054 Tank No. 2	IRP	Closed	Guadalcanal	
-	TA-04	-	Building 27054 Tank No. 3	IRP	Closed	Guadalcanal	
-	TA-05	-	The Basic School Gas Station	IRP	Deferred	Guadalcanal	A.11.3
-	TA-06	-	Building 2121 Underground Tank	IRP	Deferred	Mainside	A.11.4
-	TA-07	-	New Burn Pit Underground Tank No. 1	IRP	Deferred	Mainside	A.11.5
-	TA-08	-	Camp Goettge Underground Tank No. 1	IRP	Deferred	Guadalcanal	A.11.6
-	TA-09	-	Camp Goettge Underground Tank No. 2	IRP	Deferred	Guadalcanal	A.11.7
-	TA-10	-	Building 3141 Underground Tank	IRP	Deferred	Mainside	A.11.8
-	TA-11	-	Building 24009 Underground Tank	IRP	Deferred	Guadalcanal	A.11.9
-	TA-12	-	Motor Transport Fuel Tank No. 24160	IRP	Deferred	Guadalcanal	A.11.10
-	TA-13	-	Motor Transport Fuel Tank No. 24161	IRP	Deferred	Guadalcanal	
-	TP-42	-	Camp Usphur Sludge Drying Bed No. 1	IRP	Closed	Guadalcanal	A.12.1
-	TP-43	-	Camp Usphur Sludge Drying Bed No. 2	IRP	Closed	Guadalcanal	
-	TP-44	-	Camp Usphur Sludge Drying Bed No. 3	IRP	Closed	Guadalcanal	
Site 28	TP-45	-	Old Brown Field Sewage Treatment Plant (includes Pistol Range)	IRP	Closed	Mainside	A.12.2
Site 27	TP-47	-	Camp Goettge Sewage Treatment Plant	IRP	Closed	Guadalcanal	A.12.3
Site 29	TP-48	-	Rifle Range Sewage Treatment Plant	IRP	Closed	Guadalcanal	A.12.4
-	W-01	-	Building 4 Washrack	IRP	Closed	Mainside	A.13.1
-	W-02	-	Building 24007 Washrack	IRP	Closed	Guadalcanal	A.13.2
-	W-03	-	Building 24009 Washrack	IRP	Closed	Guadalcanal	A.13.3
-	W-04	-	Sanitary Landfill Washrack	IRP	Closed	Guadalcanal	A.13.4
-	W-05	-	Building 27956 Washrack	IRP	Closed	Guadalcanal	A.13.5
Site 30	W-06	-	Building 2101 Washrack	IRP	Closed	Mainside	A.13.6
-	W-07	-	Building 2013 Washrack No. 1	IRP	Closed	Mainside	A.13.7
-	W-08	-	Building 663 Washrack	IRP	Closed	Mainside	A.13.8
-	W-09	-	Building 28000 Washrack	IRP	Closed	Mainside	A.13.9
-	W-10	-	Building 3252 Washrack	IRP	Closed	Mainside	A.13.10

Table 2-1. Master Table of Environmental Restoration Program Sites
Fiscal Year 2020 Site Management Plan
Marine Corps Base Quantico, Quantico, Virginia

Site Identification Number	FFA/SMP Designation	OU	Site Name	IRP Site or MRS	Site Status	Mainside or Guadalcanal Section	Report Section
-	W-11	-	Building 2013 Washrack No. 2	IRP	Deferred	Mainside	A.13.11
-	W-12	-	Building 3016 Washrack	IRP	Closed	Mainside	A.13.12
-	W-13	-	Building 3045 Washrack	IRP	Closed	Mainside	A.13.13
-	W-14	-	Building 27002 Washrack	IRP	Closed	Guadalcanal	A.13.14
Site 98	-	20	Golf Course Maintenance Area	IRP	Closed	Mainside	A.14.1
Site 97	-	-	Creosote Spill Site	IRP	Closed	Guadalcanal	A.14.2
Site 96	-	10	Old Landfill Southern Wetlands	IRP	Closed	Mainside	A.14.3
-	-	-	Fire Training Area (near Old Batch Plant)	IRP	Closed	Mainside	A.14.4
-	-	-	Larson's Gym Outfall (Storm Sewer Outfall No. 8)	IRP	Deferred	Mainside	A.14.5
-	-	-	Storm Sewer Outfall No. 16	IRP	Deferred	Mainside	A.14.6
-	-	-	Storm Sewer Outfall No. 30	IRP	Deferred	Mainside	A.14.7
Site 101	-	-	Potomac River	IRP	Closed	No Specific Location	A.14.8.1
-	-	-	Quantico Creek/Little Creek	IRP	Closed	No Specific Location	A.14.8.2
-	-	-	Arsenic Burial Area No. 2	IRP	Closed	Mainside	A.14.9
-	-	-	Asbestos Burial Area No. 2	IRP	Closed	Guadalcanal	A.14.10
-	-	-	Merrimac Disposal Area	IRP	Closed	Guadalcanal	A.14.11
UXO 002	-	-	600 Yard Rifle Range South	MRS	Closed	Mainside	B.1
UXO 003	-	-	600 Yard Rifle Range North	MRS	Closed	Mainside	B.2
UXO 004	-	-	1,000 Yard Range	MRS	Closed	Mainside	B.3
UXO 005	-	-	0.22 Caliber Anti-Aircraft Range	MRS	Closed	Mainside	B.4
UXO 006	-	-	1,000 Inch Landscape Range	MRS	Closed	Mainside	B.5
UXO 007	-	-	Federal Bureau of Investigation Target Range	MRS	Closed	Mainside	B.6
UXO 008	-	-	600 Yard Polo Field Rifle Range	MRS	Closed	Mainside	B.7
UXO 009	-	-	Original Pistol Range	MRS	Closed	Mainside	B.8
UXO 010	-	-	Replacement Pistol Range	MRS	Closed	Mainside	B.9
UXO 011	-	-	Machine Gun Range	MRS	Closed	Mainside	B.10
UXO 012	-	-	Turner Field Skeet Range	MRS	Closed	Mainside	B.11
UXO 014	-	-	Marine Corps Flying Field Bombing Targets No. 1	MRS	Closed	Mainside	B.12
UXO 015	-	-	Marine Corps Flying Field Bombing Targets No. 2	MRS	Closed	Mainside	
UXO 016	-	-	Marine Corps Flying Field Bombing Targets No. 3	MRS	Closed	Mainside	
UXO 017	-	-	Marine Corps Flying Field Bombing Targets No. 4	MRS	Closed	Mainside	
UXO 020	-	-	Artillery Range	MRS	Closed	Mainside	B.13
UXO 022	-	-	Aviation Bombing Range	MRS	Closed	Mainside	B.14
UXO 023	-	-	Aircraft Artillery Spotting Range	MRS	Closed	Mainside	B.15
UXO 027	-	-	Potomac River Firing Range	MRS	Closed	Mainside	B.16
UXO 029	-	-	Chopawamsic Creek Skeet Range No. 2	MRS	Closed	Mainside	B.17
UXO 030	-	-	Bore Sighting Range	MRS	Closed	Mainside	B.18
UXO 031	-	28	Camp Barrett Training Areas 5 and 8	MRS	Closed	Guadalcanal	B.19
UXO 032	-	-	Camp Upshur Training Area 17	MRS	Closed	Guadalcanal	B.20

Notes:

1. FFA/SMP Designation refers to site-related categories identified within the FFA and applies as part of the site identification in previous SMPs.

2. Report section identifies the section within this SMP where additional details regarding the site is provided.

Abbreviations:

FFA - Federal Facility Agreement

IRP - Installation Restoration Program

MRS - Munitions Response Site

OU- Operable Unit

SMP - Site Management Plan

Open Installation Restoration Program Sites

This section presents a summary of the open IRP sites at MCBQ. A brief description of each open site and current status are provided. **Figure 3-1** shows the location of each open site. **Table 3-1** provides an overview of each of the open IRP sites including: site identification and description; abbreviated site history; MCBQ section location (Mainside or Guadalcanal); current ERP phase; and the FY 2020 goals as established by the QPMT. **Appendix H** presents the Environmental Restoration Program Goals for all open ERP sites based on the site-specific schedules identified in Sections 3.1 through 3.7. All of the open IRP sites are located on the Mainside section of MCBQ.

3.1 Site 4 (Operable Unit 4) – Old Landfill

Site 4 (OU 4) is a 24-acre landfill located on the banks of the Potomac River east of Building 672 in the Mainside of the MCBQ. This site was identified as L-02 within the FFA. The site is bounded on the east by the Potomac River, on the west by railroad tracks, on the south by an unnamed tributary and on the north by Epperson Avenue. Operations at the landfill began in the early 1920s and ceased in 1971. The landfill served as the primary disposal area for wastes that included municipal refuse, construction and demolition debris, sludge from a paint spray booth, paints and thinners, partially filled paint cans, dielectric fluids, waste oils, vehicle batteries, and compressor oils along with residential wastes. Historical records indicate that the fill area extends north to Epperson Avenue. Landfill operations extended the shoreline of the Potomac River approximately 250 feet past its original location. The subsurface soil of the landfill is approximately 5 to 8 feet thick and consists of artificial fill (clay, silt, and sand—low to moderately permeable) underlain by old Potomac River sediments. Groundwater at the site is 5 to 15 feet below grade and flows towards the Potomac River (southeast).

The following wastes were disposed of at the landfill:

- From the Paint Shop (Building 3252): 10,000 gallons of paint, 6,000 gallons of paint thinner and cleaner, 30,000 pounds of lead (from paint), and 4,000 gallons of sludge from the Paint Spray Booth.
- From the Air Conditioning Shop (Building 3252): 200 pounds of sludge from the burning of viscosine and 120 gallons of compressor oil.
- From Motor Transport Maintenance: 20,000 car batteries.
- From the Electrical Shop: 120 gallons of transformer dielectric oils.

As identified in MCBQ IRP Consensus Agreement No. 7, the investigation of this site was completed concurrently with the investigation of L-03 and B-08.

L-03 was a 2.5-acre scrapyard that was located southeast of Buildings 671 and 672 on top of the Old Landfill (L-02) on the Mainside of the MCBQ. The scrapyard was constructed in the 1950s. The site was accessible by a dirt road off of Epperson Avenue and was used for the storage of PCB-containing electrical transformers, scrap, and salvageable metals. The transformers reportedly leaked onto the ground surface. During the site visit conducted for the Confirmation Study (Radian, 1988), stained soil was observed along the eastern part of the scrapyard.

B-08 is located in the Mainside of the MCBQ south of a temporary access road adjacent to the Potomac River. This building, which has been removed, was located on top of the northeast portion of the Old Landfill (L-02) next to the DRMO Scrap Yard (L-03). No startup date is available for the site. Several PCB- and mineral oil-containing transformers were stored in the concrete building until 1979.

The results of the RI were presented in the RI Report (Tetra Tech, 2000a). An Interim Removal Action (IRA) was performed during the RI stage to address PCB-contaminated soils and sediment. As part of the IRA, a permeable geotextile cover and vegetated soil barrier layer (that is, cap) were installed in 1997. The FS Report (Tetra Tech, 2005) was finalized in 2005, and the ROD (NAVFAC, 2007) was signed by MCBQ in November 2007 and EPA in December 2007.

The selected remedy for the site consists of LUCs, long-term monitoring (LTM), and FYRs. Four FYR Reports (Tetra Tech, 2003, 2008c; NAVFAC, 2013; and CH2M, 2018) have been conducted since the completion of the interim remedy. An LTM Plan, including a Remedial Design for LUCs, was finalized in January 2008 (Tetra Tech, 2008a). LTM activities, which began in December 2009, are ongoing. **Figure 3-2** presents the proposed schedule for Site 4. To date, 15 rounds of sampling have been completed. An optimization effort to combine the LTM for Site 4 and Site 99 Quantico Embayment occurred in FY 2019, with the first combined LTM report being submitted in March 2019. The combined LTM optimization updated the 2008 LTM plan. Currently, Site 4 is in the Long-term Management ERP phase.

3.2 Site 95 (Operable Unit 19) – Building 2101 Paint Booth Sump

Site 95 (OU 19), which was constructed in 1984, is located on the Marine Corps Air Facility inside the former paint shop of Building 2101, which housed the Building 2101 Dry Paint Booth (D-03). This site was identified as M-27 in the FFA. The sump was a subgrade concrete unit with a submersible pump that was embedded in the building's floor and covered by a metal grill. The unit received washwater from the paint booth. The washwater was piped to a spigot outside the building. When the sump was full, a hose was attached to the spigot, and the washwater was drained to the sanitary sewer system (M-02) via the drain at W-06 (Building 2101 wash rack).

A DTAWS investigation was conducted at the site during FY 1999. Prior to the completion of a DTAWS report, the QPMT agreed to proceed to an SSP because SSP investigations were planned at other Building 2101 sites. The SSP investigation was completed in FY 2001. The results of the SSP investigation were presented to the QPMT and EPA Technical Support at a July 9, 2002, meeting, where the QPMT agreed to proceed with a remedial action. The results of the Engineering Evaluation and Cost Analysis (EE/CA) were presented to the QPMT at a September 30, 2004 meeting. At a subsequent meeting, the QPMT decided to proceed with preparing an RI/FS Report (Tetra Tech, 2008b). The ROD (NAVFAC, 2008) was signed in September 2008.

The selected remedy for the site was treatment of groundwater, LUCs, and FYRs. A Treatability Study for the use of oxygen-releasing compound was performed (Tetra Tech, 2009a; 2012a) and additional sampling was recommended to delineate the nature and extent of contamination. During the completion of a Supplemental Investigation (Tetra Tech, 2011c; 2012b), a source area upgradient of the sump was identified. An additional Treatability Study for in situ chemical oxidation was completed, and a TCRA, consisting of groundwater treatment and soil mixing, was completed in April 2013.

Figure 3-3 presents the proposed schedule for Site 95. A Supplemental Investigation for Residual Contamination Delineation and Monitoring Natural Attenuation Evaluation was completed in April 2016. A Groundwater Investigation for a Focused FS is currently ongoing. An Explanation of Significant Differences and/or ROD Amendment and a Remedial Design will be prepared after the results of the Focused FS are available. Currently, Site 95 is in the FS ERP phase given the Focused FS planned.

3.3 Site 99 (Operable Unit 12) – Quantico Embayment

The QPMT identified the need to evaluate potential releases (and impacts) from various IRP sites to the watersheds at the MCBQ. The focus of the watershed investigation was to evaluate the potential for human health and/or ecological risk associated with chemical releases to the Potomac River from IRP sites at the MCBQ.

The Quantico Embayment portion of the watershed study is Site 99 (OU 12). The Site 99 Quantico Embayment is approximately 190 acres along the eastern shoreline of MCBQ. Site 99 is a semi-circular inlet of the Potomac River. The water depths of the embayment range from tidal along the shoreline to approximately 5 to 6 feet where the embayment meets the Potomac River. The tidal range between low and high tide in this area is approximately 1 to 2 feet. There is a broad shelf between 3 and 5 feet deep before the embayment meets the Potomac River. The Quantico Embayment habitat is characterized by shallow slow-moving waters and fine-grained silt and clay sediments characteristic of depositional areas. The salinity of the embayment varies

according to season ranging from less than 0.5 part per thousand in the spring to nearly 3 parts per thousand in the fall.

The Sewage Treatment Plant (STP) drainage channel conveys stormwater runoff from areas surrounding the Mainside STP to a culvert beneath Epperson Avenue. The channel bisects the Site 99 Soil Areas (approximately 0.55 acre) located south of Epperson Avenue. Runoff water ultimately discharges to the Quantico Embayment. The Potomac River Sediment Area 1 portion of Site 99 ranges in water depth from tidal along the shoreline, to approximately 15 feet deep at the edge of the study area on the western edge of the Potomac River channel.

Site 99 includes the Quantico Embayment, the drainage channel near the Mainside STP, and the Potomac River Sediment Area 1. A remedial action was completed in 2015 for the remaining areas of Site 99 based on the results of the Post-Interim Remedial Action Report (Battelle and Neptune & Co., 2004) and FS Report (Battelle and Neptune & Co., 2007). A ROD (NAVFAC, 2011a) for these areas was signed by MCBQ and EPA in September 2011. The selected remedy for these areas consists of the placement of a habitat enhancement cap over pesticide- and PCB-contaminated soil in the Quantico Embayment, the removal of pesticide-contaminated sediment in the drainage channel near the Mainside STP, and monitored natural recovery for pesticide-contaminated sediment in the Potomac River Sediment Area 1. LUCs, LTM, and FYRs will be conducted.

Figure 3-4 provides the proposed schedule for Site 99. The remedial action for Site 99 was completed in 2015. To date, four rounds of LTM sampling have been completed. A LUC Remedial Design was finalized in October 2016. An optimization effort to combine the LTM for Site 4 and Site 99 Quantico Embayment occurred in FY 2019, with the first combined LTM report being submitted in March 2019. Currently, Site 99 (Quantico Embayment) is in the Long-term Management ERP phase.

3.4 Site 100 (Operable Unit 13) – Chopawamsic Creek

The Chopawamsic Creek portion of the watershed study is Site 100 (OU 13). Site 100 was divided into four areas, Areas No. 1 through 4, for the purposes of the RI/FS ERP phase. The sampling design for the RI was presented in the associated Work Plan (Tetra Tech, 2002b). During comment resolution on the draft RI Report at a March 17, 2005 QPMT meeting, the Team agreed to postpone RI activities and proceed to an EE/CA (with additional sampling), which would consist of completing a pilot study. The Sampling and Analysis Plan for the Pilot Study (Battelle and Neptune & Co., 2005) was submitted to the QPMT on April 7, 2005. The results of the additional sampling were presented to the QPMT at a January 26, 2006 QPMT meeting. During a March 24, 2006 QPMT meeting, the QPMT decided to forgo the EE/CA, finalize the draft RI Report, and proceed to an FS. The RI Report (Tetra Tech, 2007) and FS Report (Battelle and Neptune & Co., 2008) were finalized, and the ROD (NAVFAC, 2011b) was signed by MCBQ and EPA in September 2011.

No action under CERCLA is necessary for Areas No. 1, 2, and 4 of Site 100. However, a remedial action is required to address lead-contaminated sediment in Area No. 3. The selected remedy for this area consists of monitored natural recovery. LUCs, LTM, and FYRs will also be conducted for this area. In addition, the selected remedy will be evaluated after five years with site-specific data.

Figure 3-5 provides the proposed schedule for Site 100. Currently, Site 100 is in the Long-term Management ERP phase.

3.5 Site 102 (Operable Unit 23) – Abraham's Creek

Following the completion of the Site 100 RI Report (Tetra Tech, 2007) and FS Report (Battelle and Neptune & Co., 2008), the QPMT agreed that Abraham's Creek, which was part of Site 100 (Area No. 4), would become a separate site (Site 102). The QPMT signed a decision document (MCBQ IRP Consensus Agreement No. 6) documenting this decision in May 2009.

Site 102 (OU 23) is located in the southeastern portion of Chopawamsic Creek near the confluence of Chopawamsic Creek and the Potomac River. The creek is partially influenced by tidal fluctuations in the northern section of the creek, but a land bridge and beaver dam restrict tidal influence in the upstream (southern) portions

of the creek. Pesticides have been detected in the sediment in a large stretch of the creek. The most prevalent pesticide, Dichloro-diphenyl-trichloroethane (DDT), has been detected at relatively high concentrations. No known onshore point sources of DDT have been identified in areas surrounding the creek. Potential widespread application of DDT to the surrounding area is suspected as the historical source, although the disposal of DDT into the creek has not been dismissed as a potential historical release.

Figure 3-6 provides the proposed schedule for Abraham's Creek. In June 2015, a Treatability Study to evaluate the effectiveness of various cap materials for use in preparing the Remedial Design was finalized. An FS Addendum is currently being prepared to re-evaluate the remedial alternatives for the site in consideration of the Environmental Security Technology Certification Program (ESTCP) research for treatment of PCB and pesticides in sediment. Currently, Site 102 is in the FS ERP phase.

3.6 Site 104 (Operable Unit 21) – Building 2113 Underground Tank Loading/Unloading Area

Site 104 (OU 21), formerly known as SWMU M-13, is located at Building 2113, a former heating plant for MCBQ located in the Mainside section along the Potomac River and adjacent to Bauer Road. Site 104 is located on the southwest side of Building 2113. The site consists of a concrete pad, a sump, and associated underground piping, which services the Underground Tank Loading/Unloading Area (TA-1) adjacent to the Potomac River within TA-2. No startup date is available. Runoff and spills from this area, which may have occurred during loading and unloading operations, were designed to drain into the sump. During the RFA, an oily stain 1 foot in diameter was observed approximately 1 foot downgradient of the tank's discharge pipe.

During the DTA and SSP site visits, the site was inactive. During the SSP site visit, the concrete pad was surrounded by newly paved asphalt to the south and west and grassy areas to the north and east. A sump was not observed at the site. No visible evidence of contamination was present.

A DTA investigation was conducted at the site during FY 2000. The results of the DTA investigation were presented in DTA Report No. 8 (Tetra Tech, 2000b). The QPMT initially agreed to proceed to a DTAWS investigation. However, an SSP investigation was conducted at SWMU M-13 during FY 2001 because an SSP investigation was planned for other IRP sites located in the immediate vicinity of SWMU M-13. The results of the SSP investigation were presented at March 6 and April 9, 2002 meetings, where the QPMT initially agreed to proceed with an interim remedial action. The results of the EE/CA were presented to the QPMT at a September 30, 2004 meeting. At a subsequent meeting, the QPMT decided to proceed with preparing an RI/FS Report for the site, while completing a pilot study for site remediation. The Pilot Study Report for Site Remediation (AGVIQ/CH2M, 2008) was finalized in 2008. During a May 7, 2009 meeting, EPA requested the collection of additional samples to further evaluate the vapor intrusion pathway for the RI. The vapor intrusion fieldwork was completed in April 2011 (Tetra Tech, 2010e), and the RI/FS Report was finalized in November 2012 (Tetra Tech, 2012c). A ROD (NAVFAC, 2014) was signed in September 2014. The remedy for the site is in situ enhanced bioremediation, LTM, LUCs, and FYRs. The remedy has been delayed due to petroleum reported immediately upgradient of the site during utility related excavation work in 2016 and 2017.

Figure 3-7 presents the proposed schedule for Site 104. An investigation for petroleum impacts is currently ongoing. The Remedial Design will be completed following the petroleum investigation. Currently, Site 104 is in the Remedial Design ERP phase.

3.7 Site 105 (Operable Unit 38) – Soil Areas

Site 105 (OU 38) was formerly known as Site 99 Soil Areas. Prior to being incorporated into Site 99 (OU 38), the drainage channel and adjacent soil areas were part of Site 32. Site 32 was also known as SWMU B-10, which is the former location of Building 689, a pesticide control building. Building 689 was constructed in 1937 and was destroyed in a fire in January 1985. Runoff water from firefighting entered a drainage channel near the Mainside

STP and possibly flowed across Site 32 and into the Quantico Embayment. Approximately 500 pounds of pesticides and herbicides were stored in the building prior to the fire.

In 2005, an EE/CA and an IRA were completed for Site 32. During the IRA, soil was excavated from the soil areas (referred to as Areas B and C) until the groundwater table was reached. Following excavation, confirmation samples were collected indicating that 1,1,1-Trichloro-2,2-bis(4-chlorophenyl)ethane, 1,1-Dichloro-2,2-bis(4-chlorophenyl)ethane, and 1,1-Dichloro-2,2-bis(4-chlorophenyl)ethene (DDx)-contaminated soil with concentrations in excess of the clean-up goals remained within the limits of both soil areas. However, excavations were halted because groundwater was encountered. The exposed soil was covered with 6 inches of top soil and a permanent stand of vegetation was established across the soil areas. Following the IRA at Site 32, the QPMT agreed to incorporate the drainage channel and the soil areas into Site 99 and close out Site 32 with NFA.

An EE/CA for the Site 99 soil areas was completed in 2010. The report indicated that preconstruction confirmation sampling was necessary to delineate DDx contamination in the soil areas and define the excavation depth prior to proceeding to an NTCRA. Two preconstruction confirmation sampling events were conducted in December 2011 and May 2012. The second sampling event was necessary to expand on the DDx delineation efforts, investigate petroleum contamination (petroleum-like odors in several borings and free product in one boring) that was unexpectedly encountered in Area B during the first sampling event, and confirm that PCB congeners were not present at the soil areas at concentrations exceeding the clean-up goal of 730 micrograms per kilogram that had been identified for Site 99 sediment.

The preconstruction sampling results revealed that Area B contained DDx-contaminated soil at concentrations exceeding the clean-up goals at varying depths down to 8.5 feet bgs and DDx-contaminated soil that exceeded the clean-up goals was limited to 0.5 foot bgs in Area C. The concentration of PCBs in one soil sample from 0.5 to 2.5 feet bgs in Area C exceeded the PCB clean-up goal for the Quantico Embayment. In addition, evidence of petroleum contamination was encountered in Area B; however, concentrations of volatile organic compounds in Area B were less than risk-based screening levels for the protection of human health and the environment. To capture the petroleum product so that it would not impact the Quantico Embayment, absorbent booms and pads were installed during the May 2012 preconstruction sampling event, and in December 2012 a linear low-density polyethylene (plastic) liner, non-woven geotextile fabric felt, and sand layer were placed over soil areas as an interim measure. A Supplemental Investigation was completed in June 2016 to delineate the extent of petroleum contamination within the soil areas and north of Epperson Avenue.

Figure 3-8 provides the proposed schedule for the Site 105 Soil Areas. An RI is planned for completion in 2020, followed by an FS, a Proposed Plan, and a ROD. Currently, Site 105 is in the RI ERP phase.

Table 3-1. Open Installation Restoration Program Sites Overview

Fiscal Year 2020 Site Management Plan
Marine Corps Base Quantico, Quantico, Virginia

Site Identification and Designation	Site Name	Operable Unit (OU)	Abbreviated Site History	MCBQ Section	Current ERP Phase	Fiscal Year 2020 Goals	Comments
Site 04	Old Landfill	04	24-acre old landfill operating from early 1920s through 1971. Landfill operations extended shoreline of Potomac River approximately 250 feet past original location	Mainside (Figure 3-1)	Long Term Management	None	Selected remedy consists of land use controls (LUCs), long term monitoring (LTM), and Five Year Review (FYR) reports related to the installation of an engineered cap installed in 1997. LTM efforts are ongoing.
	Defense Reutilization and Marketing Office (DRMO) Scrapyard		2.5-acre scrapyard located on top of the Old Landfill (L-02) constructed in the 1950s. Used for storage of polychlorinated biphenyl (PCB) containing transformers which reportedly leaked onto ground surface				
	Building 669		Former building (since removed) located on top of the northeast portion of the Old Landfill (L-02) next to DRMO Scrapyard (L-03). Several PCB and mineral oil transformers were stored in this building until 1979				
Site 95	Building 2101 Paint Booth Sump	19	Paint booth sump constructed in 1984 in the former paint shop of Building 2101. Washwater from the paint booth was drained from a spigot to the sanitary sewer system	Mainside (Figure 3-1)	Feasibility Study	None	Selected remedy is treatment of groundwater, LUCs, and site reviews. Although a Record of Decision (ROD) was previously completed for this site in 2008, an additional source area was identified in 2011. A Feasibility Study Addendum (completion in Summer 2020) and potentially a ROD Explanation of Significant Differences (completion in Spring 2022) are planned.
Site 99	Quantico Embayment	12	The embayment is approximately 190 acres located along the eastern shoreline of MCBQ within a semi-circular inlet of the Potomac River. PCB and pesticide contamination in soil and sediment is present within the embayment area	Mainside (Figure 3-1)	Long Term Management	None	Selected remedy consists of placement of a habitat enhancement cap, dredging and offsite disposal of contaminated sediment, and monitored natural recovery in addition to LUCs. LTM efforts are ongoing.
Site 100	Chopawamsic Creek	13	Representing the Chopawamsic Creek portion of the Quantico Watershed Study subdivided into four areas (1 through 4). Lead-contaminated sediment identified in Area No. 3; other areas agreed as no action	Mainside (Figure 3-1)	Long Term Management	None	Selected remedy for Area No. 3 consists of monitored natural recovery, LUCs, LTM, and FYR reports. Based on the results of the LTM, a ROD Explanation of Significant Differences (completion in early 2021) is planned.
Site 102	Abrahams Creek	23	Representing the Abrahams Creek portion of the Quantico Watershed Study. Pesticides have been detected at relatively high concentrations within the creek sediment	Mainside (Figure 3-1)	Feasibility Study	None	The Remedial Investigation and Feasibility Study for Site 102 were previously completed as part of Site 100. A Feasibility Study Addendum is anticipated (completion in late 2019).
Site 104	Building 2113 Underground Tank Loading/Unloading Area	21	Building 2113 is a heating plant for MCBQ; the underground tank loading/unloading area is located next to the building. Runoff and spills from this area were designed to drain into a sump. The heating plant operated from 1941 to 1986; currently the building is vacant and all tanks have been removed or closed in-place	Mainside (Figure 3-1)	Remedial Design	None	The selected remedy is in-situ enhanced bioremediation, monitoring, LUCs, and FYR reports. Petroleum investigation (completion in 2019) is required prior to Remedial Design.
Site 105	Soil Areas	38	Former location of Building 689, a pesticide control building, which was constructed in 1937 and destroyed in a fire in 1985. Approximately 500 pounds of pesticides and herbicides were stored in building prior to fire; runoff water from firefighting entered a nearby drainage channel	Mainside (Figure 3-1)	Remedial Investigation	None	A Remedial Investigation Report is planned (completion in Summer 2020) based on a supplemental investigation for petroleum contamination in soil.

- Notes:
1. Fiscal Year 2020 Goals are based on those identified by Quantico Project Managers Team (QPMT) as being EPA or Navy Targets.
 2. Current ERP Phase is based on Section 5.2 of Department of the Navy Environmental Restoration Program Manual, August 2006. The Current ERP Phase reflects the actual phase for the site, not the current ERP Phase identified within the Navy "Normalization of Data" Database (NORM)
 3. Site 04 is identified as one site herein based on the use of OU-4 in recent project documents including the ROD; historical documents identify three sites related to this OU consisting of: Site 4, L-2 (Old Landfill); L-3 (DRMO Scrapyard); and B-8 (Building 669)

Abbreviations:

ERP - Environmental Restoration Program

FYR - Five Year Review

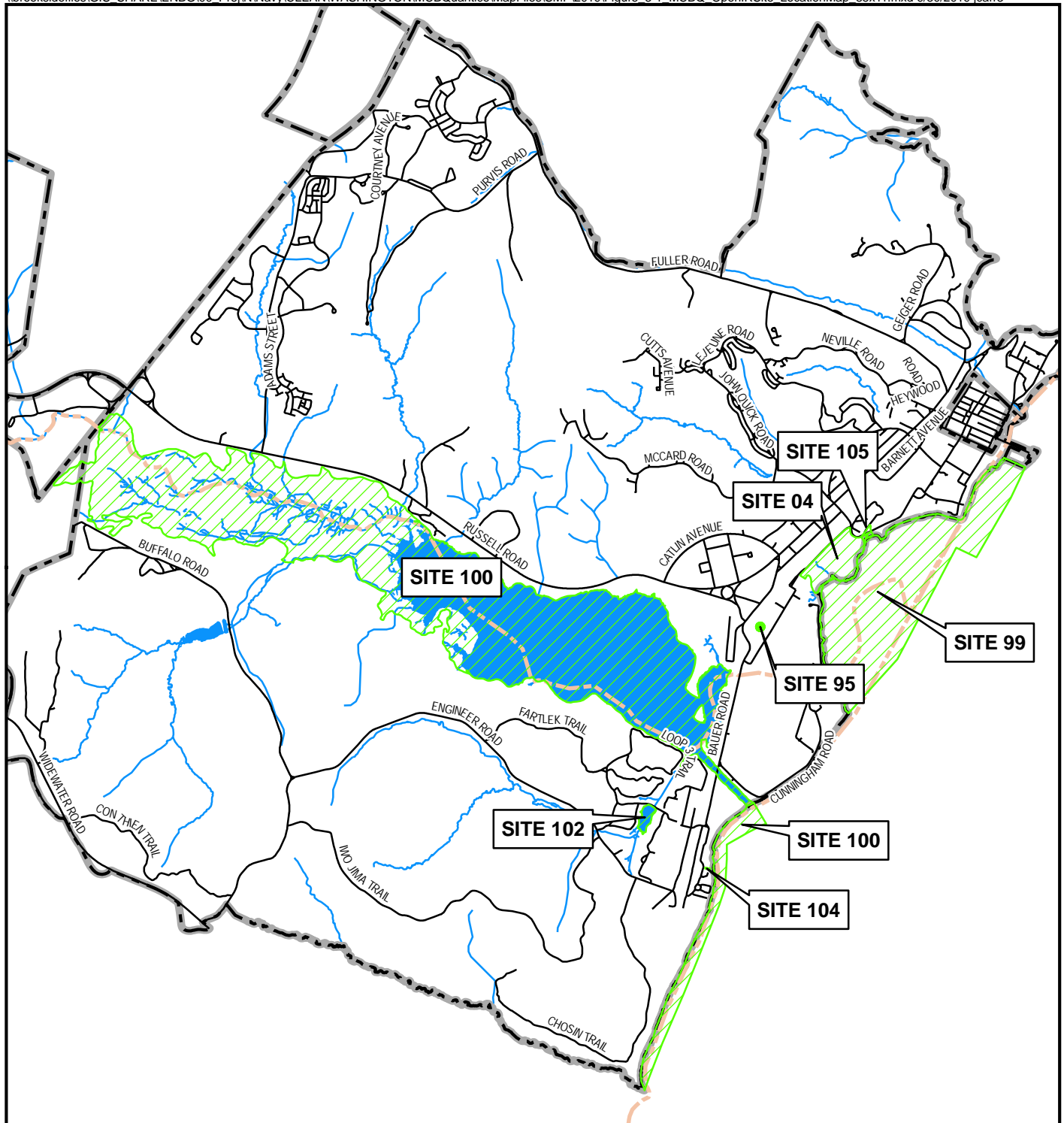
IRP - Installation Restoration Program

LTM - Long Term Monitoring








LUC - Land Use Controls

RACR - Remedial Action Completion Report

ROD - Record of Decision



Legend

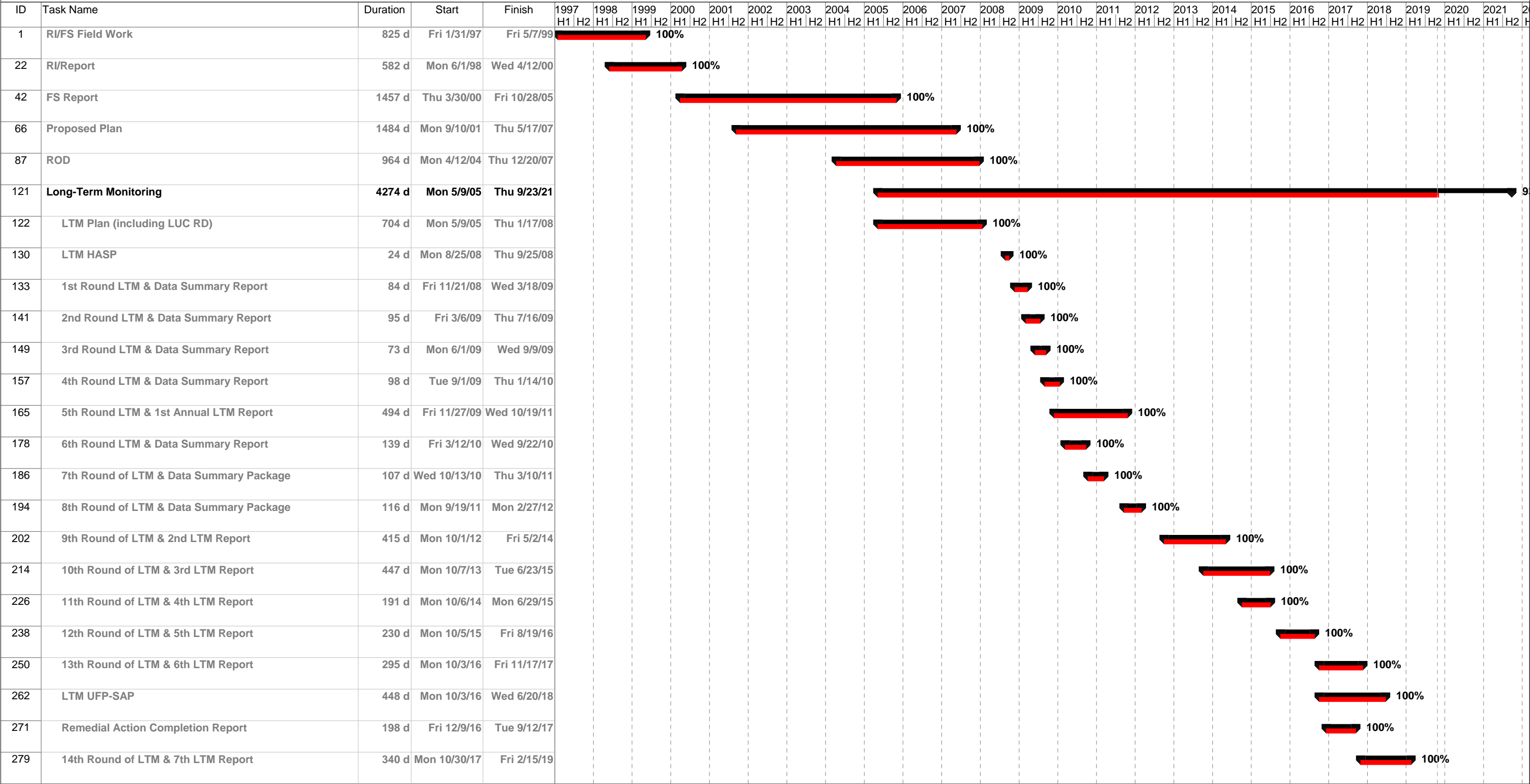
-  Open IR Site
-  Main Road
-  Minor Road
-  County Line
-  Base Boundary
-  Stream
-  Lake/Creek/Reservoir



0 1,700 3,400
Feet

Figure 3-1
Open IRP Site Location Map
Site Management Plan
Marine Corps Base Quantico (MCBQ)
Quantico, Virginia

Figure 3-2
Site 4 (Operable Unit 4) - Old Landfill Schedule



Legend

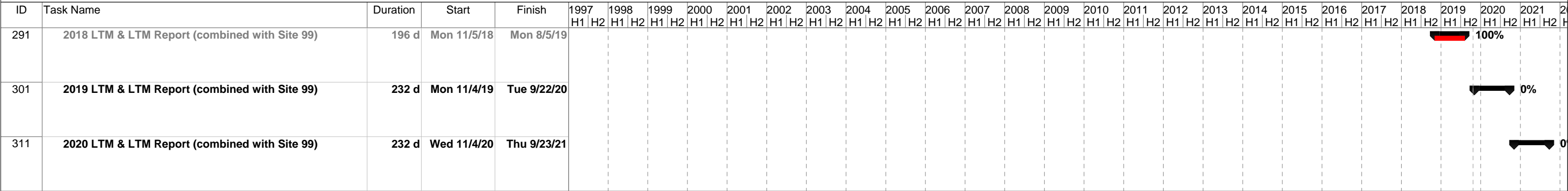
Summary

Summary Progress

Task

Task Progress

Figure 3-2
Site 4 (Operable Unit 4) - Old Landfill Schedule



Legend

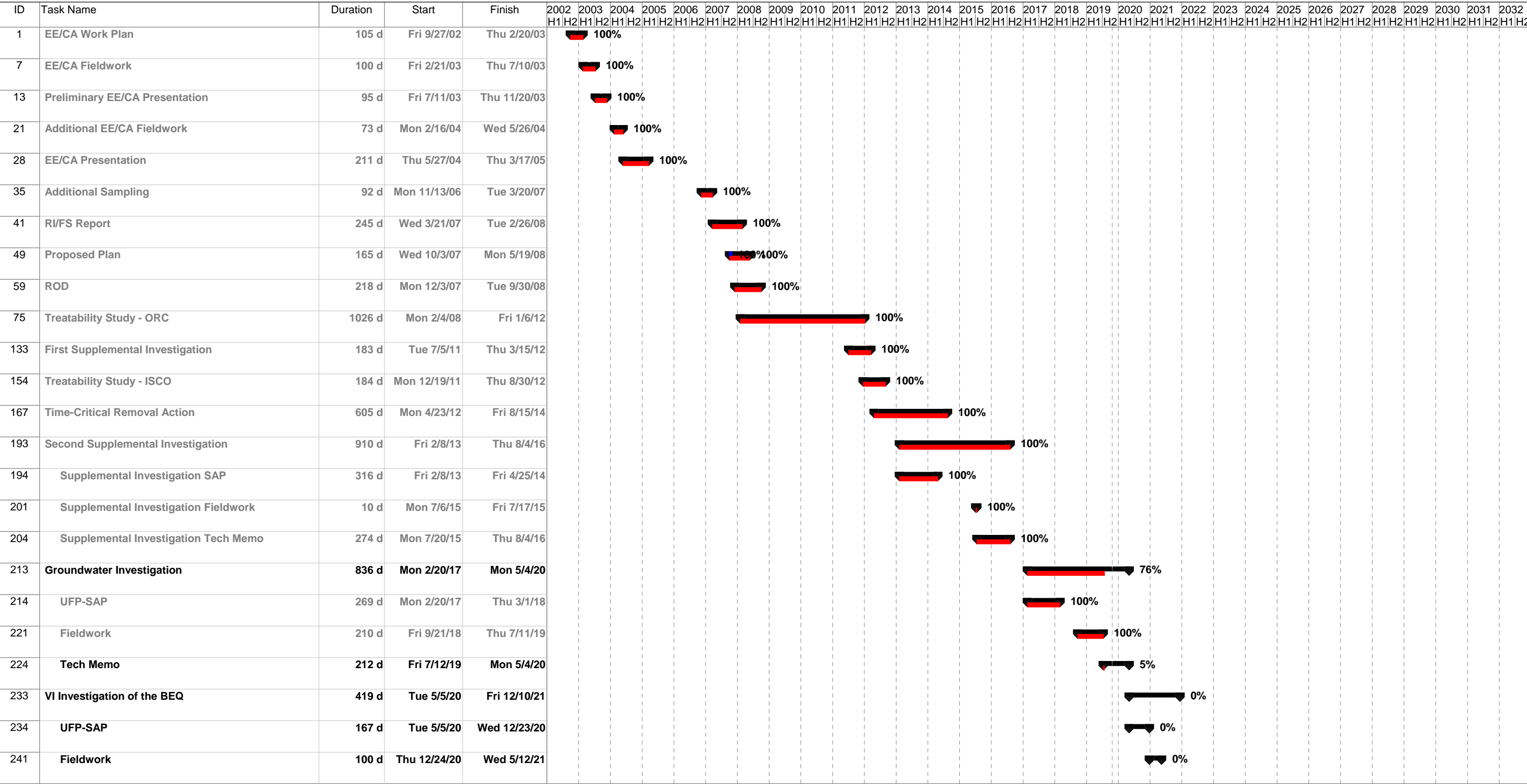
Summary

Summary Progress

Task

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Figure 3-3
Site 95 (Operable Unit 19) – Building 2101 Paint Booth Sump Schedule



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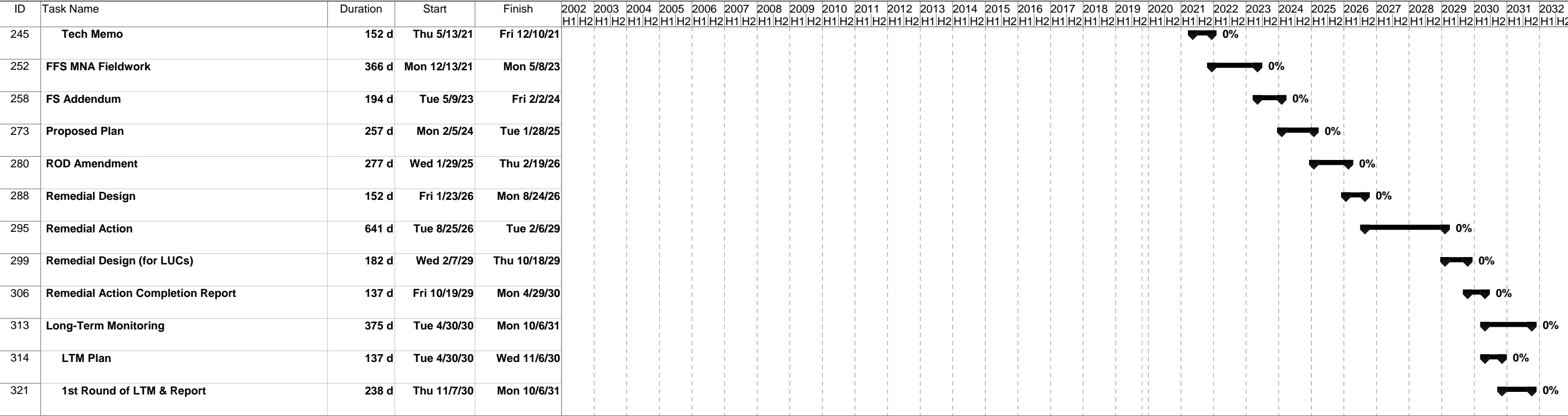
Summary

Summary Progress

Task

Task Progress

Figure 3-3
Site 95 (Operable Unit 19) – Building 2101 Paint Booth Sump Schedule



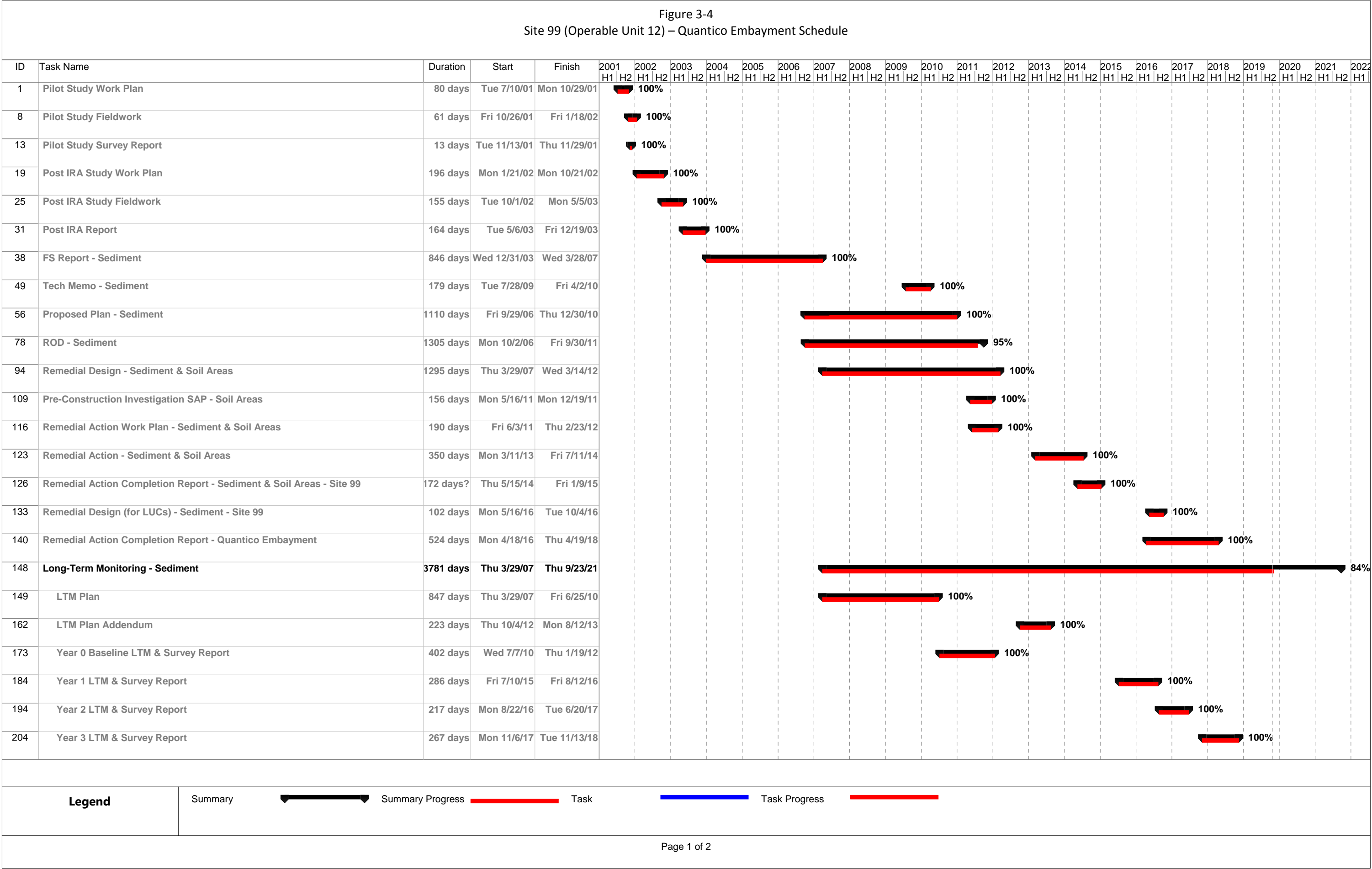
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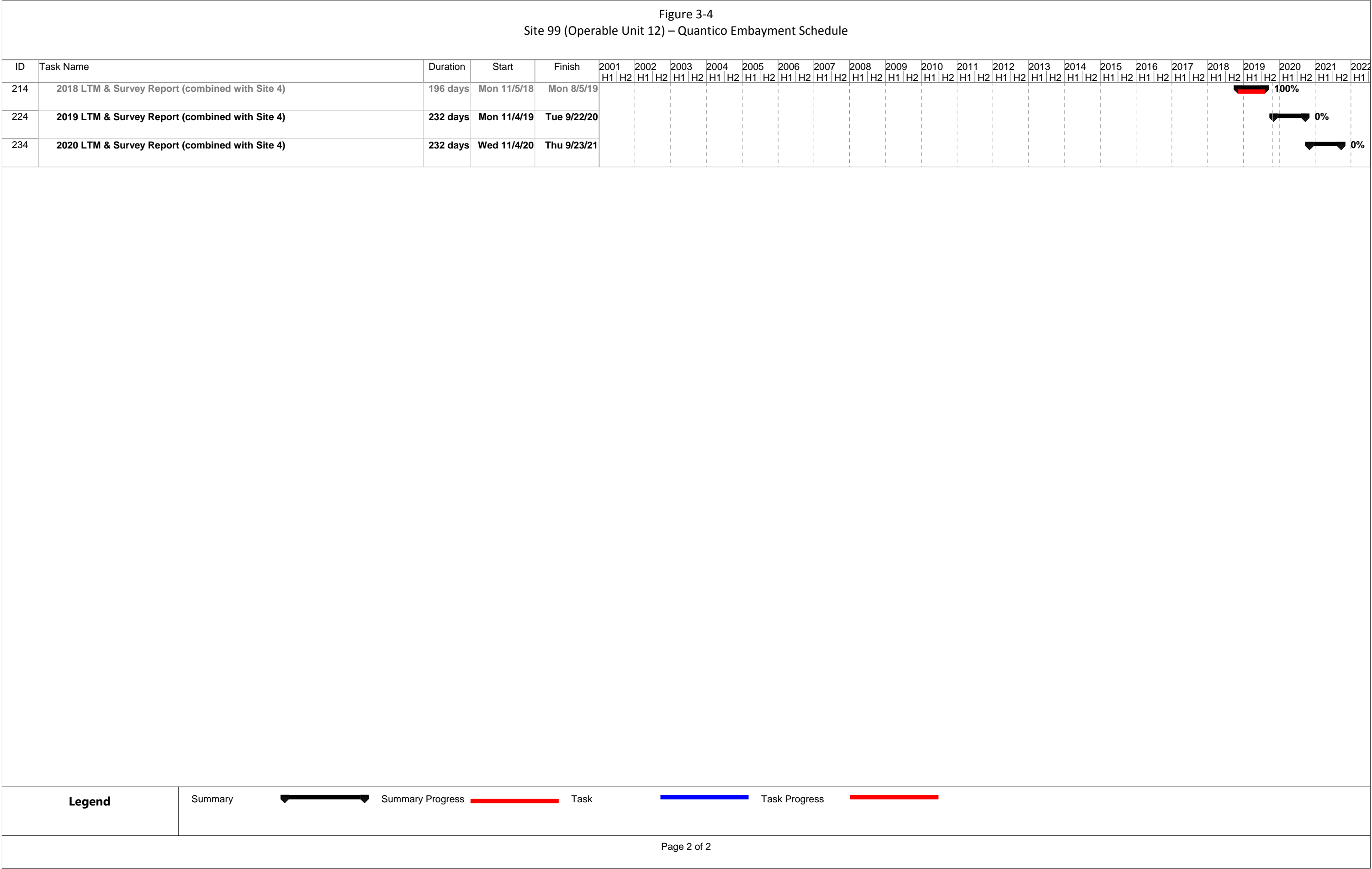
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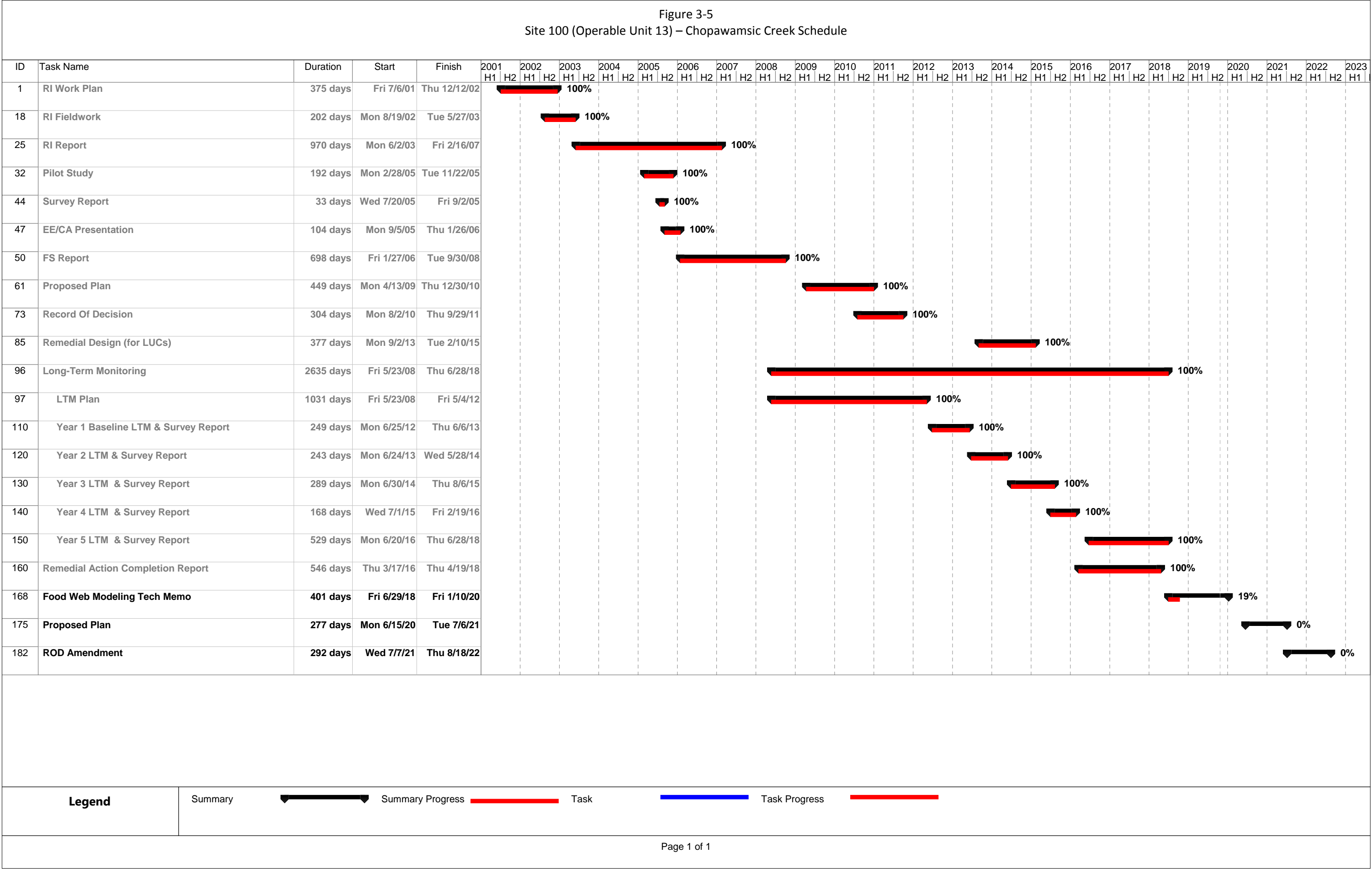
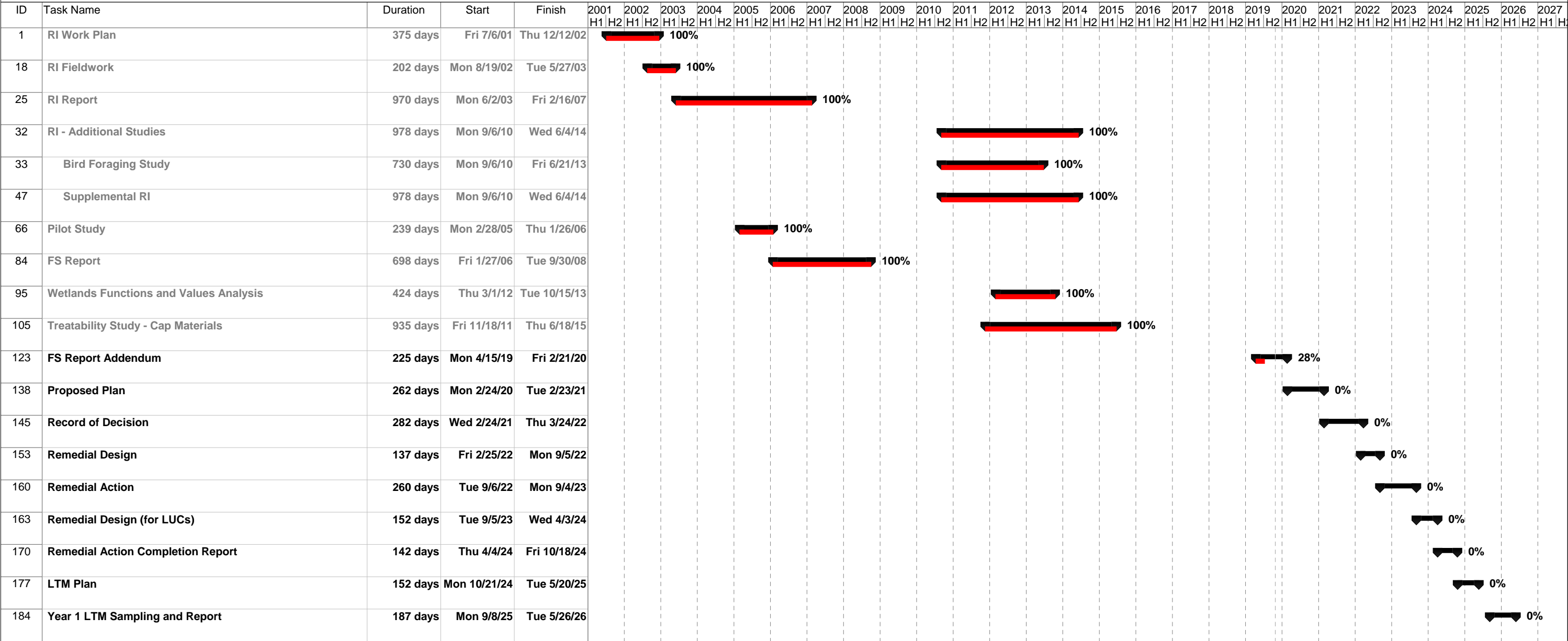


Figure 3-6
Site 102 (Operable Unit 23) – Abraham’s Creek Schedule



Legend

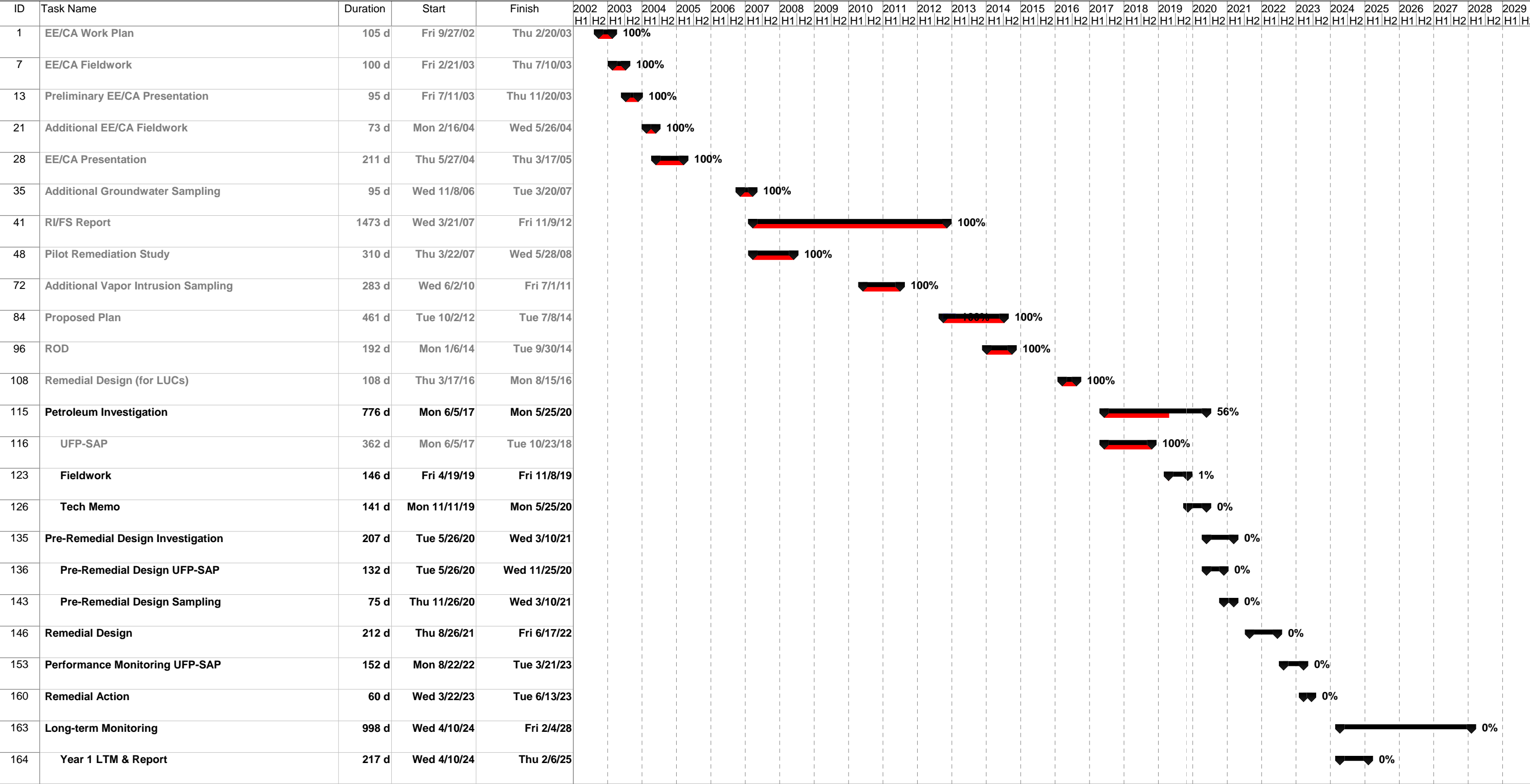
Summary

Summary Progress

Task

Task Progress

Figure 3-7
Site 104 (Operable Unit 21) - Building 2113 Underground Tank Loading/Unloading Area Schedule



Legend

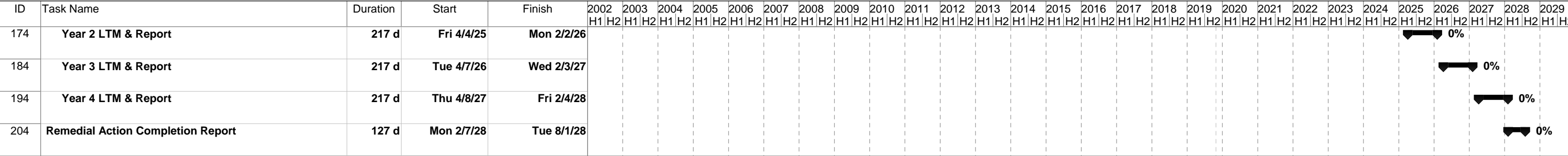
Task

Task Progress

Summary Progress

Summary

Figure 3-7
Site 104 (Operable Unit 21) - Building 2113 Underground Tank Loading/Unloading Area Schedule



Legend

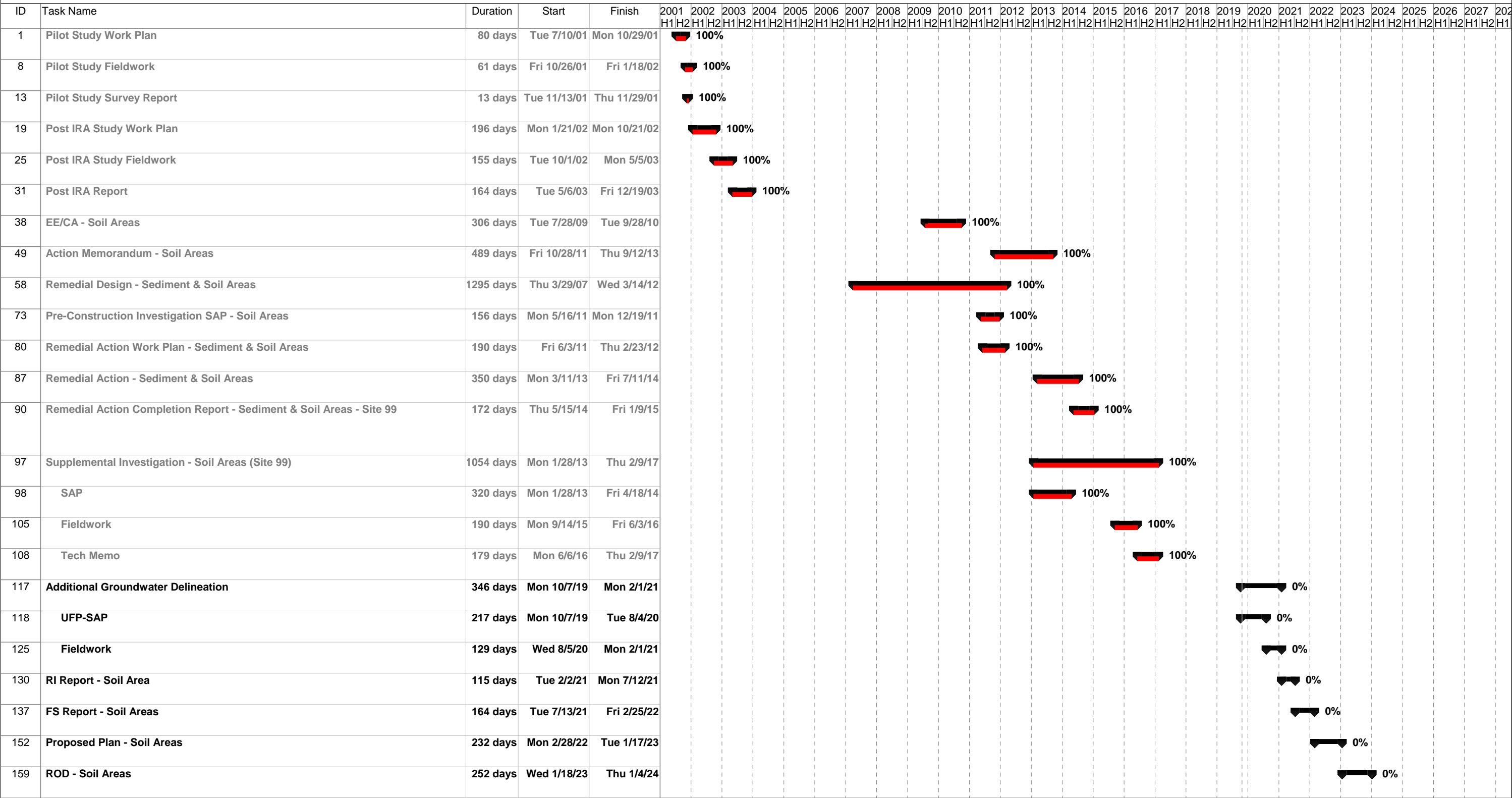
Task

Task Progress

Summary Progress

Summary

Figure 3-8
Site 105 (Operable Unit 38) – Soil Areas Schedule



Legend

Summary

Summary Progress

Task

Task Progress

Figure 3-8
Site 105 (Operable Unit 38) – Soil Areas Schedule

ID	Task Name	Duration	Start	Finish	2001 H1 H2	2002 H1 H2	2003 H1 H2	2004 H1 H2	2005 H1 H2	2006 H1 H2	2007 H1 H2	2008 H1 H2	2009 H1 H2	2010 H1 H2	2011 H1 H2	2012 H1 H2	2013 H1 H2	2014 H1 H2	2015 H1 H2	2016 H1 H2	2017 H1 H2	2018 H1 H2	2019 H1 H2	2020 H1 H2	2021 H1 H2	2022 H1 H2	2023 H1 H2	2024 H1 H2	2025 H1 H2	2026 H1 H2	2027 H1 H2	2028 H1 H2
167	Remedial Design - Soil Areas	182 days	Fri 1/5/24	Mon 9/16/24																												
174	Remedial Action - Soil Areas	360 days	Tue 9/17/24	Mon 2/2/26																												
177	Remedial Design (for LUCs)	182 days	Tue 2/3/26	Wed 10/14/26																												
184	Remedial Action Completion Report - Soil Areas	117 days	Thu 10/15/26	Fri 3/26/27																												

Legend

Summary

Summary Progress

Task

Task Progress

Open Munitions Response Sites

This section presents a summary of the open MRSs at MCBQ. A brief description of each open MRS and a statement regarding the status of the MRS are provided. **Figure 4-1** shows the location of each open site.

Table 4-1 provides an overview of each of the open MRSs including: site identification and description; abbreviates site history; MCBQ section location (Mainside or Guadalcanal); current ERP phase; and the FY 2020 goals as established by the QPMT. **Appendix H** presents the Environmental Restoration Program Goals for all open ERP sites based on the site-specific schedules identified in Sections 4.1 through 4.16.

4.1 UXO 001: Little Creek Skeet Range

The MRS is located north of the intersections of Fuller and Geiger Roads on the Mainside near the Medal of Honor Golf Course. Firing was directed to the west (towards the golf course); the direction of fire was confirmed based on a review of historical aerial photographs. Range activities included shotgun shooting at launched targets (clay pigeons). The estimated period of use for the inactive, land-based skeet range was 1936 through the mid-1940s.

Foundation remnants of the high and low houses and clay pigeon debris were observed during the 2007 SI site visit. A large construction/vegetative debris pile was located in a portion of the MRS where shot deposition likely occurred.

The SI fieldwork was conducted in spring 2010 (Tetra Tech, 2010a) and the SI Report was finalized in 2011 (Tetra Tech, 2011a). A Supplemental SI report was finalized in June 2015 and it recommended that the site be nominated for the IRP because of non-MRP contaminants (mainly polycyclic aromatic hydrocarbons). A Remedial Investigation Work Plan is scheduled for completion in late 2019. **Figure 4-2** presents the current schedule for UXO 001. Currently, UXO 001 is in the RI ERP phase.

4.2 UXO 013: 81-mm Mortar Range

This range is located on the Mainside near the main body of Chopawamsic Creek. Portions of this range were reported to be coincident with the Artillery Range (UXO 020). For example, the two former ranges shared a common impact area, as identified in the ASR. At UXO 013, 81-mm and possibly 60-mm mortars were utilized. At UXO 020, munitions suspected to have been used consist of 37-mm and 75-mm shrapnel and 4.2-inch and 81-mm mortars. The estimated period of use for the MRSs was the 1920s through the 1940s. As documented in MCBQ MRP Closeout Document No. 5 (NAVFAC, 2009), the QPMT agreed to close UXO 020 with the former artillery range activities to be addressed under UXO 013 with the former mortar range.

Three firing points, labeled as K1 through K3, were identified in the ASR for UXO 013. Only one firing point near the airfield (K2) was specifically identified for UXO 020; however, it is believed that the other firing points (K1 and K3) may also be associated with UXO 020 as reduced charges may have been employed. Two of the firing points (K2 and K3) have been included in the MRP. However, K1 is located in an active training area of MCBQ and is ineligible for MRP funding. MCBQ MRP Consensus Agreement No. 2 was signed by the QPMT to document why K1 is not included in the MRP and that actions at this firing point are deferred until the training area is closed or transferred.

The QPMT agreed to identify the various components (impact area, firing points, and firing fans) of these ranges as separate MRSs, which are discussed in **Sections 4.2.1** through **4.2.4**.

4.2.1 UXO 013A (Operable Unit 24): 81-mm Mortar Range – Impact Area

OU 24 has been identified for this MRS. UXO 013A is located on the Mainside immediately west of the 1,000 Yard Range (UXO 004). Russell Road (formerly called Trunk Road) was constructed after use of the range was discontinued; the road intersects the MRS in an east to west direction. In some areas of the MRS, 12 to 15 feet of natural topography may have been removed and fill may have been placed in some areas at depths equivalent to

15 to 30 feet. Therefore, the construction of Russell Road may have resulted in MEC being pushed and covered with fill or removed from the MRS.

The impact area received ordnance from firing points (K1 through K3). A number of 75-mm shrapnel shells and casings and metallic debris were observed on the surface of the MRS during 2007 SI site visits. Also, during the completion of SI geophysical fieldwork in spring 2009 (Tetra Tech, 2009b), various MEC and/or material potentially presenting an explosive hazard (MPPEH) were found on the ground surface. These items were found primarily in the wooded area north of Russell Road, where possible craters also were observed.

The SI Report (Tetra Tech, 2010c) recommended that the MRS proceed to an RI. MC sampling was not conducted during the SI stage because the QPMT agreed at a September 10, 2009 meeting that the objectives of the SI were fulfilled based on the SI geophysical fieldwork. In 2016, a TCRA for the removal of MEC was completed in a portion of UXO 013A as part of a Military Construction project for the Phase III widening of Russell Road (NAVFAC, 2016c). RI fieldwork activities for land portions of the MRS are ongoing. **Figure 4-3** presents the current schedule for UXO 013A and B. Currently, UXO 013A is in the RI ERP phase.

4.2.2 UXO 013B (Operable Unit 30): 81-mm Mortar Range – Firing Fans

OU 30 has been identified for this MRS. The firing fans associated with the 81-mm Mortar Range (UXO 013) and the Artillery Range (UXO 020) extend across Chopawamsic Creek on the Mainside. At the July 16-17, 2008 QPMT meeting, the QPMT agreed to evaluate the firing fans as one MRS because they are associated with one impact area and investigation activities could easily address all of the firing fans.

Geophysical fieldwork for the SI was conducted in spring 2009 (Tetra Tech, 2009b); several anomalies that could potentially represent MEC were identified in the creek near the impact area (UXO 013A). The SI Report (Tetra Tech, 2010c) recommended that the MRS proceed to an RI. MC sampling was not conducted during the SI stage because the QPMT agreed at a September 10, 2009 meeting that the objectives of the SI were fulfilled based on the SI geophysical fieldwork. RI activities for land portions of the MRS are ongoing. **Figure 4-3** presents the current schedule for UXO 013A and B. Currently, UXO 013B is in the RI ERP phase.

4.2.3 UXO 013C: 81-mm Mortar Range – Firing Point K2

Firing point K2 is one of three identified firing points associated with the 81-mm Mortar Range (UXO 013) and the Artillery Range (UXO 020). K2 is located on the Mainside in a low-lying marshy area of Chopawamsic Creek west of Range Road and the Marine Corps Air Facility. The location of this firing point has been confirmed based on a review of historical aerial photographs. No evidence of a firing point was observed during the 2007 SI site visits.

A UXO detector-aided sweep was conducted at the MRS in spring of 2009 (Tetra Tech, 2009b), MC sampling was completed in summer of 2010 (Tetra Tech, 2010b), and the SI Report was finalized in 2011 (Tetra Tech, 2011b). A Supplemental SI was completed to address outstanding issues; however, additional investigation of subsurface anomalies and debris is needed. **Figure 4-4** presents the current schedule for UXO 013C and D. Currently, UXO 013C is in the RI ERP phase.

4.2.4 UXO 013D: 81-mm Mortar Range – Firing Point K3

Firing point K3 is one of three identified firing points associated with the 81-mm Mortar Range (UXO 013). K3 is located on the Mainside in a low-lying marshy area of Chopawamsic Creek west of Range Road and the Marine Corps Air Facility. The location of this firing point has been confirmed based on a review of historical aerial photographs. No evidence of a firing point was observed during the 2007 SI site visits.

A UXO detector-aided sweep was conducted at the MRS in spring of 2009 (Tetra Tech, 2009b), MC sampling was completed in summer of 2010 (Tetra Tech, 2010b), and the SI Report was finalized in 2011 (Tetra Tech, 2011b). A Supplemental SI was completed to address outstanding issues; however, additional investigation of subsurface anomalies and debris is needed. **Figure 4-4** presents the current schedule for UXO 013C and 013D. Currently, UXO 013D is in the RI ERP phase.

4.3 UXO 018 (Operable Unit 37): Marine Corps Flying Field Bombing Targets

Marine Corps Flying Field Bombing Targets No. 1 through No. 5 were previously represented by MRSs UXO 014 through UXO 018. All five of the MRSs were previously closed in 2010; however, all five of these targets have been reopened through the MRP as UXO 018 following the discovery of munitions at Marine Corps Flying Field Bombing Target No. 1 and Marine Corps Flying Field Bombing Target No. 5 in 2015. OU 37 has been identified for this MRS.

All documentation included in the ASR (USACE, 2001b) for these five targets indicates the use of “non-explosive bombs” (for example, practice bombs with a small spotting charge), which makes sense considering the proximity of the target to the airfield and installation boundary. Typical procedures of the time required that the impact areas be visually swept on occasion; during these sweeps it was common practice to collect the bombs for reuse.

Exactly when the target came into use is unknown. It is speculated that formation of the First Aviation Group circa 1923 necessitated a need for the target. The target is evident in aerial photographs as early as 1934, but is never plotted on historical range maps. It is estimated that the target use ended in the early 1940s, when the Brown Field area was developed. **Figure 4-5** presents the proposed schedule for UXO 018. Funding is anticipated in FY 2020. Currently, UXO 018 is in the SI ERP phase; an expanded SI investigation is the anticipated next step for this MRS.

4.3.1 Marine Corps Flying Field Bombing Target No. 1

Target No. 1 is located within the exercise course of the Officers Candidates School near Route 636 in the southern portion of the Mainside.

No evidence of craters or other indications of range use were observed during the 2007 SI site visit. The 2015 discovery of munitions at this target area contributed to the reopening of this area through the MRP as part of UXO 018.

4.3.2 Marine Corps Flying Field Bombing Target No. 2

Target No. 2 is located at Larson’s Gym in the southern portion of the Mainside. Exactly when the target came into use is unknown. It is speculated that formation of the First Aviation Group circa 1923 necessitated a need for the target. The target is evident in aerial photographs as early as 1934, but is never plotted on historical range maps. It is estimated that the target use ended in the early 1940s, when the Marine Corps Air Facility was expanded.

The target area has been redeveloped. No evidence of craters or other indications of range use were observed during the 2007 SI site visit. In 1987, a 4-pound practice bomb was discovered near Larson’s Gym.

4.3.3 Marine Corps Flying Field Bombing Target No. 3

Target No. 3 is located within the Marine Corps Air Facility near the southern end of the airport runway. Exactly when the target came into use is unknown. It is speculated that formation of the First Aviation Group circa 1923 necessitated a need for the target. The target is evident in aerial photographs as early as 1934, but is never plotted on historical range maps. It is estimated that the target use ended in the early 1940s, when the Marine Corps Air Facility was expanded.

The target area has been redeveloped. No evidence of craters or other indications of range use were observed during the 2007 SI site visit.

4.3.4 Marine Corps Flying Field Bombing Target No. 4

Target No. 4 is located within the Marine Corps Air Facility near the southern end of the airport runway. Exactly when the target came into use is unknown. It is speculated that formation of the First Aviation Group circa 1923 necessitated a need for the target. The target is evident in aerial photographs as early as 1934, but is never

plotted on historical range maps. It is estimated that the target use ended in the early 1940s, when the Marine Corps Air Facility was expanded.

The target area has been redeveloped. No evidence of craters or other indications of range use were observed during the 2007 SI site visit.

4.3.5 Marine Corps Flying Field Bombing Target No. 5

Target No. 5 is located within the Marine Corps Air Facility east of the airport runway, approximately 150 feet from the Potomac River. Exactly when the target came into use is unknown. It is speculated that formation of the First Aviation Group circa 1923 necessitated a need for the target. The target is evident in aerial photographs as early as 1934, but is never plotted on historical range maps. It is estimated that the target use ended in the early 1940s, when the Marine Corps Air Facility was expanded.

The target area has been redeveloped. No evidence of craters or other indications of range use were observed during the 2007 SI site visit. The 2015 discovery of munitions at this target area contributed to the reopening of this area through the MRP as part of UXO 018. Specifically, four MK23 practice bombs were discovered during site construction activities in the proximity of the target area in 2015 (Tetra Tech, 2015).

4.4 UXO 019 (Operable Unit 31): Grenade Field

OU 31 has been identified for this MRS. UXO 019 is located immediately adjacent (south) to McCard Road on the Mainside. A portion of the MRS is located within the boundaries of the FBI Target Range (also known as Former FBI Range) (UXO 007). The range was constructed during World War I and was used for hand and rifle grenade training activities. Historical aerial photographs provide information on the range layout, such as the direction of fire and location of a protective berm in the central portion of the MRS. Craters were also evident in the photographs. The MRS has been developed and is currently an equipment laydown area, which supports electrical services at the MCBQ. Building 2117 (Radio Tower) is located in the southeastern corner of the MRS. The range was in use for an unknown length of time, but likely through the 1930s. The ASR suggests range use was sporadic over this timeframe.

Evidence of range features was not observed during the SI visit. However, a grenade component (launch tube and fuse) was discovered near the range during the 2007 SI site visit; additional MEC and/or MPPEH were found during the SI geophysical fieldwork in spring 2009 (Tetra Tech, 2009b). The MCBQ Explosive Ordnance Disposal (EOD) removed the MEC items that were found during the 2007 SI site visit and the spring 2009 SI fieldwork.

The SI Report (Tetra Tech, 2010c) recommended the completion of an RI. MC sampling was not conducted during the SI stage because the QPMT agreed at a September 9, 2009 meeting that the objectives of the SI were fulfilled based on the SI geophysical fieldwork. RI fieldwork activities for the MRS are ongoing. **Figure 4-6** presents the proposed schedule for UXO 019. Currently, UXO 019 is in the RI ERP phase.

4.5 UXO 021 (Operable Unit 32): Combat Area C Field Firing Range

OU 32 has been identified for MRS. UXO 021 is located in the western quadrant of the Mainside near Purvis Road. Small arms range activities are known to have occurred in the central portion of the MRS. Based on a review of historical aerial photographs, range activities (including artillery, mortar, and grenade firing) may also have occurred in the northern portion of the MRS near the former location of Russell Elementary School and the Child Development Center. Documentation of the range layout and ammunition types were not discovered during the ASR and SI research activities; however, evidence of training activities (trenches, old roadways/trails, sign posts, and barbed wire) were observed during the SI site visits. The estimated period of use for the MRS was 1937 to 1943.

In 2001, two 81-mm mortars and a 3-inch Stokes mortar were discovered when baseball fields were constructed between the elementary school and Child Development Center. MEC and/or MPPEH also were found during the geophysical SI fieldwork in spring 2009 (Tetra Tech, 2009b). The MCBQ EOD removed the MEC items that were found in 2001 and during the 2009 SI fieldwork.

In the mid-2000s, Base personnel discovered several metal containers in the eastern portion of the MRS. These containers were located during the 2007 SI site visits and were identified as 75-mm shipping containers. The shipping containers may be associated with a mock field ammunitions supply point that was created for training purposes at the maneuver area or the area may represent a firing point for 75-mm artillery. Considering the travel distance for 75-mm artillery, the Engineers Test Area is a possible impact area if the location was used as an artillery firing point. Artillery firing activities may have been monitored by the observation bunker located near the Credit Union along Russell Road.

The SI Report (Tetra Tech, 2010c) recommended the completion of an RI. MC sampling was not conducted during the SI stage because the QPMT agreed at a September 9, 2009 meeting that the objectives of the SI were fulfilled based on the SI geophysical fieldwork. A Treatability Study for potential munitions items using Advanced Geophysical Classification (AGC) was completed in 2015 and 2016 in the developed portion of UXO 021 to assist with the demolition of Russell Elementary School and the construction of the Quantico Middle School/High School. A TCRA for munitions items in the Treatability Study Area was completed from in 2016. Additional RI fieldwork activities for the rest of the site are ongoing. **Figure 4-7** presents the proposed schedule for UXO 021. Currently, UXO 021 is in the RI ERP phase.

4.6 UXO 024: Combat Area E Field Firing Range

The MRS is located in the Engineers Test Area, an active training area of the MCBQ. A portion of the danger zone for the MRS is located outside the Engineers Test Area on the Mainside. ASR research activities document the use of small arms at the MRS. The range appears once on a 1942 map, although range use may have occurred prior to this time. The ASR suggests that use of the range likely ended with the acquisition of the Guadalcanal in 1943.

In May 2009 the QPMT signed MRP Consensus Agreement No. 1 stating that no action was required at the MRS because: (1) a portion of the MRS was located within a boundary of an operational range (that is, Engineers Test Area) and was ineligible for inclusion under the MRP and (2) based on the information presented in the ASR, which identified that small arms only were used at the MRS, no range debris was considered to be present at the portion of the MRS that is not located within an operational range. However, in 2011 the MCBQ Range Management Branch indicated that larger munitions may have been used at the range based on common practices during the estimated period of use. Based on this information and the identification of the large danger area depicted on a historic range map, the QPMT agreed at an August 3, 2011 meeting that an SI should be completed on the land-based portion of the danger zone north of Chopawamsic Creek to determine whether MEC and MC are present. The decision to reopen the MRS was documented in an Amendment to MRP Consensus Agreement No. 1.

This MRS is being addressed under the SI phase of the MRP. An SI was completed in February 2014 and additional fieldwork was recommended by MARCORSYSCOM. **Figure 4-8** presents the proposed schedule for UXO 024. Currently, UXO 024 is in the SI ERP phase.

4.7 UXO 025 (Operable Unit 33): Quantico Clubs

The MRS, which is located on Mainside, encompasses the Quantico Clubs, the Crossroads Inn, the entire length of the 1,000 Yard Range (UXO 004), and the marsh area south of the Quantico Clubs adjacent to Chopawamsic Creek. This MRS was not originally identified as an MRS during the ASR (USACE, 2001b) activities. The QPMT agreed to include this area as an MRS because during the construction of the Quantico Clubs and Crossroads Inn in the mid-1990s, several mortars and raw white phosphorous were discovered at the MRS. The MCBQ EOD removed the mortars after they were discovered, and an RA was completed for white phosphorus.

Possible range activities including grenade and artillery firing at UXO 004 are being addressed under this MRS. The estimated period of use for these activities was 1926 to 1952. Grenade practice occurred at the 800-yard firing line. The firing was directed west towards an impact area located within the boundaries of the range. The ASR indicates that the range also was suitable for light mortar and 37-mm firing. However, these activities could not be confirmed during additional research activities conducted for the SI.

It is suspected that the eastern portion of UXO 025, where mortars and white phosphorus were found, may have been used as a munitions disposal area. Hand and rifle grenades, 60-mm mortars, 3-inch Stokes mortars, 81-mm mortars, and 4.2-inch mortars may have been used or disposed of at the MRS.

During a 2007 SI site visit, a 3-inch Stokes mortar was discovered along the toe of the bank southwest of the Crossroads Inn. This item was removed by the MCBQ EOD. No additional MEC or MPPEH were discovered during the SI geophysical fieldwork conducted in Spring 2009 (Tetra Tech, 2009b). However, subsurface anomalies potentially representing MEC or MPPEH were identified during the geophysical survey.

The SI Report (Tetra Tech, 2010c) recommended the completion of an RI. MC sampling was not conducted during the SI stage because the QPMT agreed at a September 9, 2009 meeting that the objectives of the SI were fulfilled based on the SI geophysical fieldwork. RI fieldwork activities for the MRS are ongoing. **Figure 4-9** presents the proposed schedule for UXO 025. Currently, UXO 025 is in the RI ERP phase.

4.8 UXO 026 (Operable Unit 34): Chopawamsic Creek Skeet Range No. 1

OU 34 has been identified for this MRS. The MRS is located along the bank of Chopawamsic Creek and extends out into the creek. The MRS, which was not originally identified during the ASR activities, was identified during SI research activities (a review of historical aerial photographs) conducted for the 0.22 Caliber Anti-Aircraft Range (UXO 005). The QPMT agreed to include this range as an MRS at a July 16-17, 2008 QPMT meeting. Range activities included shotgun shooting at launched targets (clay pigeons).

As part of RI activities at IRP Site 100 (Chopawamsic Creek), sediment samples were collected from the creek and marsh areas along the creek. Some of these samples were collected within the boundaries of UXO 026. Lead, a primary MC of skeet ranges, was found in the sediment within UXO 026 at concentrations greater than background concentrations. A ROD for Site 100 (NAVFAC, 2011b) was signed by the MCBQ and USEPA in September 2011. However, the QPMT agreed that additional sampling is needed to address MRP issues at UXO 026.

A proposed sampling design for the SI was presented at a March 18-19, 2009 QPMT meeting. However, the QPMT later agreed at a September 10, 2009 meeting that the objectives of the SI were fulfilled (based on the results of sampling conducted for IRP Site 100) and the MRS should proceed to an RI without conducting MC sampling at the SI stage. The SI Report (Tetra Tech, 2010c) recommended that the MRS proceed to an RI. RI activities are planned for the MRS when funds are obtained (FY 2024). **Figure 4-10** presents the proposed schedule for UXO 026. Currently, UXO 026 is in the RI ERP phase.

4.9 UXO 028: Marine Corps Exchange

The MRS is located at the intersection of Purvis and Russell Roads on the Mainside. The QPMT added the MRS to the MRP because it was reported that mortars were encountered during the construction of the Marine Corps Exchange in the late 1970s. No evidence of a range or MEC was observed during the 2007 SI site visit.

The MRS was closed out under the SI phase of the MRP. The conceptual site model for the MRS was originally presented to the QPMT at an August 14-15, 2007 MRP Subgroup meeting, where the Team tentatively agreed that no action was appropriate. However, after the 2007 meeting, a retired military person verified that MEC was removed from the area during the construction of the Marine Corps Exchange. Therefore, the QPMT agreed

during an October 20, 2009 conference call that SI fieldwork was needed to determine the path forward for the MRS. SI fieldwork was completed in November 2010 (Tetra Tech, 2010d), and the SI Report (Tetra Tech, 2011d) stated that no action was appropriate. MCBQ MRP Closeout Document No. 9, which documents the no action decision, was signed by the QPMT in January 2012; however, discussions in 2015 or 2016 within the Navy indicated that investigation of subsurface anomalies may be warranted for discussion with the QPMT. Currently, UXO 028 is in the SI ERP phase.

4.10 UXO 033 (Operable Unit 29): FBI Training Area 8

OU 29 has been identified for this MRS. UXO 033, which is centrally located within the Guadalcanal, was added to the MRP at MCBQ in 2010. The MRS was added because this area no longer meets the definition of an operational range and the ASR (USACE, 2001b) identified that this area was located within the firing fan of a former range. The MRS covers approximately 400 acres of both developed and undeveloped (wooded areas). The FBI Academy is located within the boundaries of the MRS.

The MRS lies within a portion of the suspected firing line and firing fan of Range 2, a former artillery and mortar range that was utilized from approximately 1943 to the mid-1950s. This training area was designated for use of all Division weapons in the MCBQ inventory. During a 2010 SI site reconnaissance, two illuminated rifle grenade flares were observed at the MRS in the area of the suspected firing line. Ground disturbances (that is, suspect craters) that might be related to former artillery range activities were also observed at various locations of the MRS.

The conceptual site model for the MRS was presented at a February 15, 2011 meeting, where a UXO detector-aided survey and geophysical investigation were recommended to further evaluate the potential presence of MEC at the MRS. The SI fieldwork was completed in March 2012, and the SI Report finalized in July 2013 recommended an RI for this MRS. The Remedial Investigation Work Plan is scheduled for completion in 2023. **Figure 4-11** presents the proposed schedule for UXO 033. Currently, UXO 033 is in the RI ERP phase.

4.11 UXO 034 (Operable Unit 27): Lunga Recreation Area South

OU 27 has been identified for this MRS. UXO 034 is centrally located within the Guadalcanal and was added to the MRP at MCBQ in 2010. The MRS was added because this area no longer meets the definition of an operational range and the ASR identified that this area was located within a former range. This MRS consists of approximately 96 acres. Major features of the MRS associated with the Lunga Recreation Area are a general store/office, picnic areas and playgrounds, a ball field, a trailer and boat storage yard, a recreational vehicle parking area, and surrounding wooded areas. The Lunga Reservoir (MRS UXO 035) borders the MRS on the west. The Lunga Recreation Area is currently closed to access for recreational use.

The MRS lies within a portion of the suspected firing fan of Range 2, a former artillery and mortar range that was utilized from approximately 1943 to the mid-1950s. This training area was designated for use of all Division weapons in the MCBQ inventory. The suspected impact area for Range 2, Lunga Reservoir, borders the MRS. EOD reports indicate that 383 ordnance items were recovered from the area between 1984 and 1999. During a 2010 SI site reconnaissance, ground disturbances (that is, suspect craters) that might be related to former artillery impacts were observed in various locations of the MRS. The SI for UXO 034 was performed in 2012 with the SI Report completed in July 2013. The SI Report recommended an RI for the MRS due to numerous MEC/MPPEH surface items identified including 2.36-inch rockets and 81-mm mortar fins.

A TCRA was conducted in April through October 2012 based on the initial munitions findings from the SI (Shaw, 2013). The TCRA was focused to remove surface and subsurface MEC/MPPEH within the MRS. More than 500 MEC/MPPEH items were recovered during this TCRA with 4,601 pounds of material documented as safe (MDAS) taken offsite for disposal. Due to quality control findings identified by NAVFAC Washington and MCBQ in November 2012, additional munitions clearance operations were required.

A TCRA was performed in the summer of 2013 primarily consisting of surface clearance because of unanticipated density of subsurface anomalies encountered. Thirty-five MEC/MPPEH items were identified requiring demolition and a total of 817 pounds of MDAS was taken offsite for disposal.

A Phase I RI for generating a list of subsurface geophysical anomalies as potential MEC/MPPEH for a future NTCRA was initiated in January 2014. The dig list resulting from this AGC investigation identified a total of 10,722 intrusive investigation locations. The NTCRA for these intrusive investigations, in addition to other areas requiring mag and dig, was initiated in September 2015 and was completed in December 2016. In 2019, APTIM initiated a TCRA for potential subsurface MEC/MPPEH through the intrusive investigation of the remaining 3,035 geophysical anomalies initially identified in 2014; fieldwork was completed in March 2019 (reporting documentation is forthcoming).

In January and February 2015, a TCRA was performed to remove partially buried drums in a 0.6-acre portion of the MRS where trenches were identified. Fourteen drums were identified and removed during this TCRA. Most of the drums were empty or filled with surrounding soil. Waste characterization sampling done of drum contents indicated the materials were nonhazardous. Environmental soil sampling performed in the excavation area underneath where the drums were removed indicated no evidence of contamination in comparison to residential risk-based concentrations. The trenches were likely not constructed for the purposes of waste disposal; these areas appear to have been a convenient location to bury domestic waste (for example, glass bottles) and empty drums associated with the Lunga Recreation Area.

UXO 034 has been referred to as Decision Unit 1 and simply as UXO 034 OU 27 in previous project documents. The current identification for the MRS is UXO 034 (Lunga Recreation Area). RI fieldwork activities for the MRS are ongoing. **Figure 4-12** presents the proposed schedule for UXO 034. Currently, UXO 034 is in the RI ERP phase.

4.12 UXO 035 (Operable Unit 39): Lunga Reservoir

OU 39 has been identified for this MRS. This MRS, which is centrally located within the Guadalcanal, was added to the MRP at MCBQ in 2014. The MRS was added because this area no longer meets the definition of an operational range and the ASR identified that this area was located within a former range. The MRS covers approximately 520 acres of former range area within Lunga Reservoir and is adjacent to Lunga Recreation Area land-based MRSs UXO 034, UXO 038, and UXO 039.

From 1943 to the mid-1950s, the training area currently known as Lunga Recreational Area was part of an operational range and impact area, Range 2. During the mid-1950s, a dam was constructed on this range and the impact area was flooded, creating Lunga Reservoir. Lunga Reservoir and the adjacent recreation area are used primarily for camping, fishing, picnicking, boating, and special events. The Reservoir also serves as a secondary source of drinking water for MCBQ. The northwestern and southwestern portions of the Reservoir are located within the surface danger zones of several operational ranges, as indicated by buoy markers, and are subject to closure during live fire exercises. TECOM removed the recreational area of Lunga Reservoir from the range inventory. To date, numerous UXO, such as mortars, rockets, artillery projectiles, and grenades, have been recovered on land and in the water at Lunga Recreational Area. The recreational area is currently closed for public use, pending munitions removal actions.

In 2018, a TCRA was initiated for removal and disposal of surface and potential subsurface MEC/MPPEH from the exposed shoreline and nearshore lake bed of the eastern portion of UXO 035 adjacent to UXO 034, UXO 038, and UXO 039. The TCRA fieldwork was completed in March 2019; reporting documentation is forthcoming. The RI is scheduled to begin in FY 2023. **Figure 4-13** presents the proposed schedule for UXO 035. Currently, UXO 035 is in the RI ERP phase.

4.13 UXO 036 (Operable Unit 40): Grenade Pit

OU 40 was reportedly located between Building 27002 and MCBQ Route 4 adjacent to MCBQ Route 1 within Training Area 8-B. The area of the site is approximately 12 acres. Grenades were found during utility trenching at

which point work was stopped and an alternate utility route was identified. This area appears to be a munitions disposal area from previous range cleanups. This area also encompasses former IRP Site 2 (Asbestos Disposal Area), so asbestos may also be encountered during work. The asbestos was from several welding shops at MCBQ. The asbestos was reportedly placed in plastic bags and cardboard and metal boxes, along with construction debris, including steel, wood, concrete, and wire rope. Afterwards, the trench was backfilled with soil.

A Remedial Investigation Work Plan is scheduled for completion in late 2019. **Figure 4-14** presents the proposed schedule for UXO 036. Currently, UXO 036 is in the RI ERP phase.

4.14 UXO 037 (Operable Unit 41): Chopawamsic Creek Range Fans

OU 41 is composed of the aquatic portions of the range fans from UXO 013 (81-mm Mortar Range) and UXO 024 (Combat Area E Field Firing Range). Portions of this range were also reported to be coincident with the Artillery Range (UXO 020). For example, the two MRSs share a common impact area, as identified in the ASR. At UXO 013, 81-mm and possibly 60-mm mortars were utilized. Munitions suspected to be used at UXO 020 consist of 37-mm and 75-mm shrapnel and 4.2-inch and 81-mm mortars. The estimated period of use for the MRSs was the 1920s through the 1940s.

The RI is scheduled to begin in FY 2024. **Figure 4-15** presents the proposed schedule for UXO 037. Currently, UXO 037 is in the RI ERP phase.

4.15 UXO 038 (Operable Unit 35): Lunga Recreation Area Central

OU 35 is identified for this MRS. UXO 038, which is centrally located within the Guadalcanal, was added to the MRP at MCBQ in 2010. The MRS was added because this area no longer meets the definition of an operational range and the ASR identified that this area was located within a former range. The MRS lies within a portion of the suspected firing fan of Range 2, a former artillery and mortar range that was utilized from approximately 1943 to the mid-1950s. The MRS consists of 108 acres of mostly wooded areas with intermixed multi-use recreational public areas such as playgrounds, picnic areas, campgrounds, and hiking trails. Lunga Recreation Area is currently closed to public use.

The SI for UXO 038 was performed in 2012 with the SI Report completed in July 2013. During the SI, no surface MEC or MPPEH was recovered. In 2014, a TCRA was performed with surface clearance completed across approximately 34 acres. No MEC was encountered during the TCRA, but 40 pounds of munitions debris, primarily consisting of fragments of high explosive mortars and artillery projectiles was recovered.

In September 2015 through March 2016, an RI was initiated at UXO 038 for subsurface metallic anomalies indicative of MPPEH using conventional digital geophysical mapping (DGM). 28,314 subsurface targets representative of potential MPPEH were selected from the DGM survey. No MC sampling was conducted. The RI Report recommended that approximately 80 percent of the site is suitable for further investigation using AGC, and approximately 20 percent of the site is suitable for further investigation using traditional intrusive investigation methods.

UXO 038 has been referred to as UXO 034 Decision Unit 2 and simply as UXO 034 OU 35 in previous project documents (it was separated from UXO 034 in FY 2016). The current identification for the MRS is UXO 038 (Lunga Recreation Area Central).

RI fieldwork activities for the MRS are ongoing; a Pilot Study (Treatability Study) to evaluate the potential application of AGC in a wooded environment is planned for Summer and Fall 2019. **Figure 4-16** presents the proposed schedule for UXO 038. Currently, UXO 038 is in the RI ERP phase.

4.16 UXO 039 (Operable Unit 36): Lunga Recreation Area North

OU 36 has been identified for UXO 039. This MRS, which is centrally located within the Guadalcanal, was added to the MRP at MCBQ in 2010. The MRS was added because this area no longer meets the definition of an operational

range and the ASR identified that this area was located within a former range. The MRS is 158 acres and lies within a portion of the suspected firing fan of Range 1, estimated to have been used from 1943 to the 1960s, and Range 2, estimated to have been used from 1943 to the mid-1950s. Both former ranges were artillery and mortar ranges with potential rifle range use in Range 1. Approximately 75 percent of the MRS lies outside the firing ranges for Ranges 1 and 2 and previous investigations at the other Lunga Recreation Area MRSs suggest the impact areas are south and outside of the UXO 039 boundary (CH2M, 2016). The MRS consists of two subareas: the Civilian Workers Recreation Area (CWRA) and the Non-Civilian Workers Recreation Area (NCWRA) (the portion of MRS outside of the CWRA). The CWRA is a 10-acre area in the north corner of the MRS used for public/recreational activities such as camping and picnicking. It contains limited public use facilities (a baseball field is also located at the far northern edge of the CWRA). The remaining 148 acres of the MRS, identified as NCWRA, is largely forested and does not contain campgrounds or hiking trails. UXO 039 is currently unavailable to public use as part of the Lunga Recreation Area closure.

The SI for UXO 038 was performed in 2012 with the SI Report completed in July 2013 (Tetra Tech, 2013). A limited surface survey was performed; no subsurface geophysics were performed. No munitions-related items were discovered during the investigation.

UXO 039 has been referred to as UXO 034 Decision Units 3 and 4 and simply as UXO 034 OU 36 in previous project documents (it was separated from UXO 034 in FY 2016). The current identification for the MRS is UXO 039 (Lunga Recreation Area North).

RI fieldwork activities for the MRS are ongoing. **Figure 4-17** presents the proposed schedule for UXO 039. Currently, UXO 039 is in the RI ERP phase.

Table 4-1. Munitions Response Program Open Sites Overview

Fiscal Year 2020 Site Management Plan
Marine Corps Base Quantico, Quantico, Virginia

Site Identification and Designation	Site Name	Operable Unit (OU)	Abbreviated Site History	Current ERP Phase	Fiscal Year 2020 Goals	Comments
UXO 001	Little Creek Skeet Range	None	Former shotgun shooting range at launched targets from 1937 through mid-1940s	Remedial Investigation	None	Evaluation of Supplemental Site Inspection Report completed in June 2015 to determine next steps. Remedial Investigation Work Plan is scheduled for completion in late 2019.
UXO 013A	81 mm Mortar Range (Impact Area)	24	Impact area for former 81 mm mortar and artillery ranges used between 1919 and 1943. Site area is 28 acres	Remedial Investigation	None	Remedial Investigation fieldwork is ongoing.
UXO 013B	81 mm Mortar Range (Firing Fans)	30	Firing fans for former 81 mm mortar and artillery ranges used between 1919 and 1943. Firing fans extend across the Chopawamsic Creek. Site area is 260 acres total, 40 acres terrestrial	Remedial Investigation	None	Remedial Investigation fieldwork is ongoing.
UXO 013C	81 mm Mortar Range (Firing Point K2)	None	Firing point (K2) for former 81 mm mortar and artillery ranges used between 1919 and 1943	Remedial Investigation	None	Remedial Investigation approach to be determined.
UXO 013D	81 mm Mortar Range (Firing Point K3)	None	Firing point (K3) for former 81 mm mortar and artillery ranges used between 1919 and 1943	Remedial Investigation	None	Remedial Investigation approach to be determined.
UXO 018	Marine Corps Flying Field Bombing Target No. 5	37	Former Marine Corps Flying Field Bombing Target Area; use ended in early 1940s	Remedial Investigation	None	Site Investigation Work Plan is planned for completion in 2020.
UXO 019	Grenade Field	31	Former grenade range used between 1917 and and 1942. Site area is 9 acres. Also referred to as the Grenade Course	Remedial Investigation	None	Remedial Investigation fieldwork is ongoing.
UXO 021	Combat Area C Field Firing Range.	32	Historical training area and likely impact area for mortar and light artillery. Site area is 285 acres. Former range use estimated from 1935 to 1943	Remedial Investigation	None	Remedial Investigation fieldwork is ongoing.
UXO 024	Combat Area E Field Firing Range	None	Training area where small arms and potentially larger munitions items may have been used. Estimated end of use of former range in 1943	Site Inspection	None	Closeout of comments with Marine Corps Systems Command to determine next steps; completion of Remedial Investigation at UXO 013A and 013B as input.
UXO 025	Quantico Clubs	33	Former range used multiple activities including: a rifle and pistol range; mortar and grenade firing activities; and mortar and white phosphorous disposal area. General timeframe of range use from 1926 to 1952. Site area is 35 acres	Remedial Investigation	None	Remedial Investigation fieldwork is ongoing.
UXO 026	Chopawamsic Creek Skeet Range No. 1	34	Former skeet range located along the north bank of the Chopawamsic Creek	Remedial Investigation	None	Remedial Investigation fieldwork is planned for completion in 2024.
UXO 028	Marine Corps Exchange	None	Site located at intersection of Purvis Road and Russell Road; mortars reportedly recovered during construction of Marine Corps Exchange in late-1970s	Site Inspection	None	No action for site agreed based on Site Inspection Report completed in 2011 and Closeout Document in 2012. Further investigation may be warranted to be discussed by Quantico Project Managers Team.
UXO 033	FBI Training Area 8	29	Site within suspected firing line and firing fan of former artillery and mortar range used from 1943 to the mid-1950s. Site area is 400 acres	Remedial Investigation	None	Remedial Investigation Work Plan is scheduled for completion in 2023.
UXO 034	Lunga Recreation Area South	27	Site within suspected firing fan of former artillery and mortar range used from 1943 to the mid-1950s. Site area is 96 acres	Remedial Investigation	None	Remedial Investigation ongoing; Phase 2 fieldwork for munitions constituents anticipated in 2020.
UXO 035	Lunga Reservoir	39	Site within suspected firing fan of former artillery and mortar range used from 1943 to the mid-1950s. Site area is 520 acres (consisting of Lunga Reservoir)	Remedial Investigation	None	A Shoreline Time Critical Removal Action was completed in 2019. Remedial Investigation Work Plan is scheduled for completion in 2023.

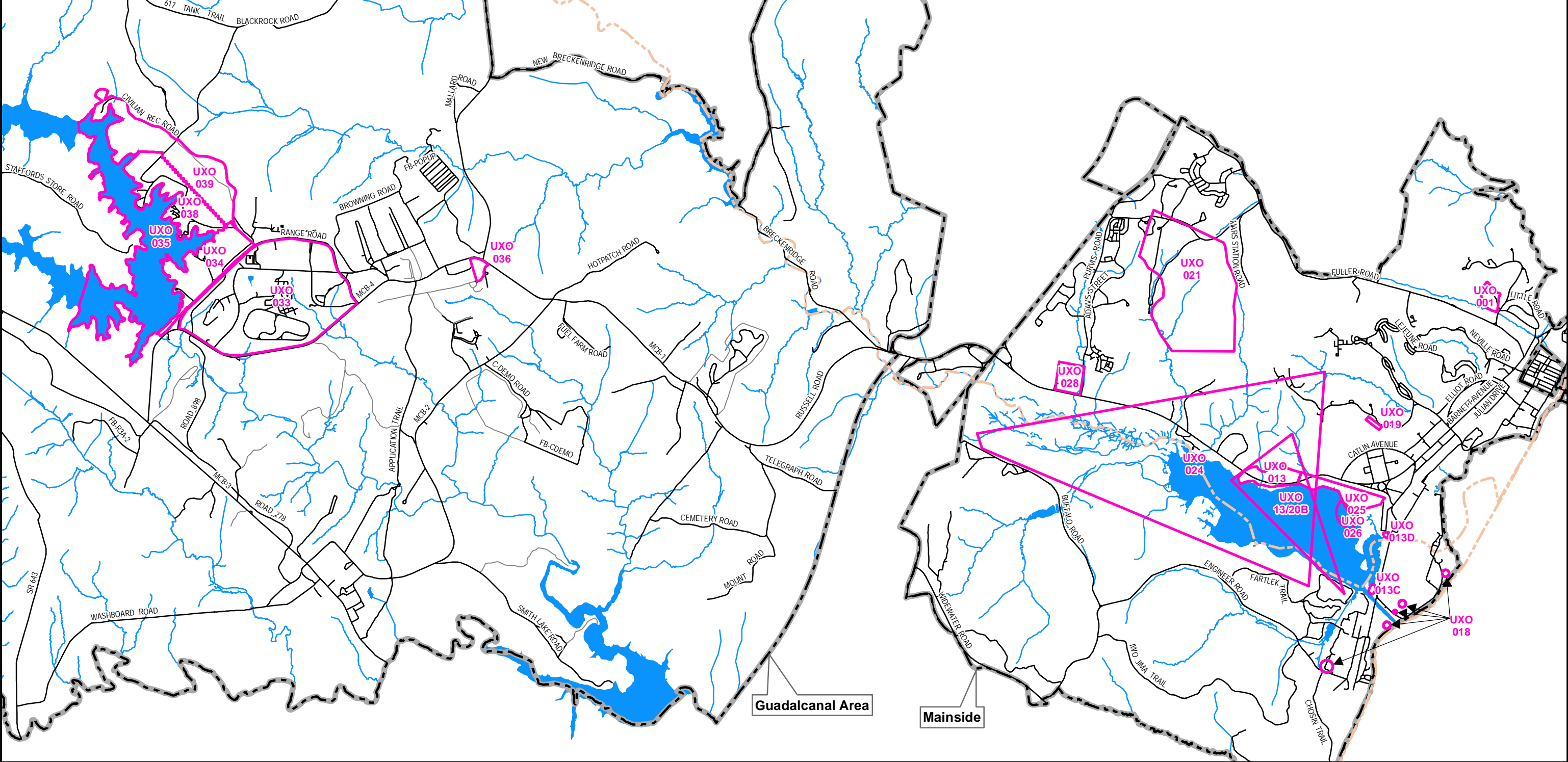
Table 4-1. Munitions Response Program Open Sites Overview

Fiscal Year 2020 Site Management Plan
Marine Corps Base Quantico, Quantico, Virginia

Site Identification and Designation	Site Name	Operable Unit (OU)	Abbreviated Site History	Current ERP Phase	Fiscal Year 2020 Goals	Comments
UXO 036	Grenade Pit	40	Grenades identified during recent (2015) utility trenching near Building 27002. Area appears to be munitions disposal area from previous range cleanups. Site area is approximately 12 acres	Remedial Investigation	RI Start	Remedial Investigation Work Plan is scheduled for completion in late 2019.
UXO 037	Chopawamsic Creek Range Fans	41	Firing fans for former 81 mm mortar, artillery, and training ranges used between the 1920s and 1940s. Site consists of the aquatic portions only of the former firing fans	Remedial Investigation	None	Remedial Investigation Work Plan is scheduled for completion in 2025.
UXO 038	Lunga Recreation Area Central	35	Site within suspected firing fan of former artillery and mortar range used from 1943 to the mid-1950s. Site area is 109 acres	Remedial Investigation	None	Remedial Investigation ongoing.
UXO 039	Lunga Recreation Area North	36	Site within suspected firing fan of former artillery and mortar range used from 1943 to the mid-1950s. Site area is 158 acres	Remedial Investigation	None	Remedial Investigation ongoing.

Notes:
1. Fiscal Year 2020 Goals are based on those identified by Quantico Project Managers Team (QPMT) as being EPA or Navy Targets.
2. Current ERP Phase is based on Section 5.2 of Department of the Navy Environmental Restoration Program Manual, August 2006. The Current ERP Phase reflects the actual phase for the site, not the current ERP Phase identified within the Navy "Normalization of Data" Database (NORM)

Abbreviations:
ERP - Environmental Restoration Program
mm - millimeter
MRP - Munitions Response Program
TCRA - Time Critical Removal Action



Legend

- MRP Boundary
- Main Road
- Minor Road
- County Line
- Stream
- Lake/Creek/Reservoir
- Base Boundary

Note:
Boundary for UXO 037 is not defined in
Naval Installation Restoration
Information Solution database

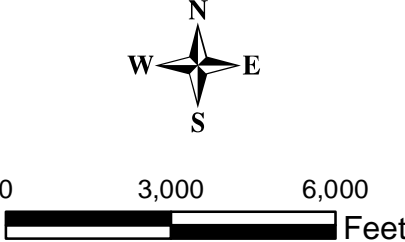


Figure 4-1
Open MRP Site Location Map
Site Management Plan
Marine Corps Base Quantico (MCBQ)
Quantico, Virginia

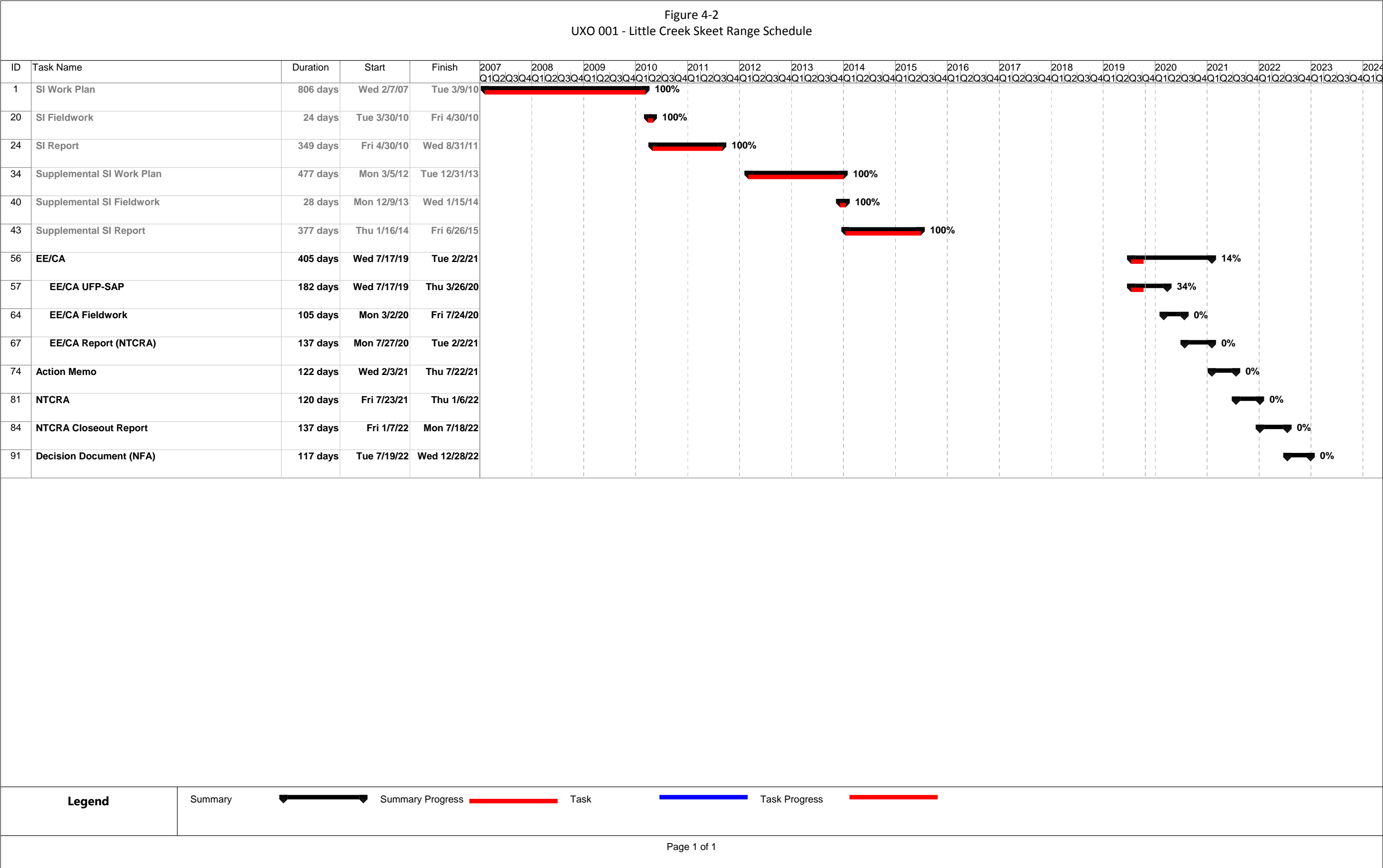
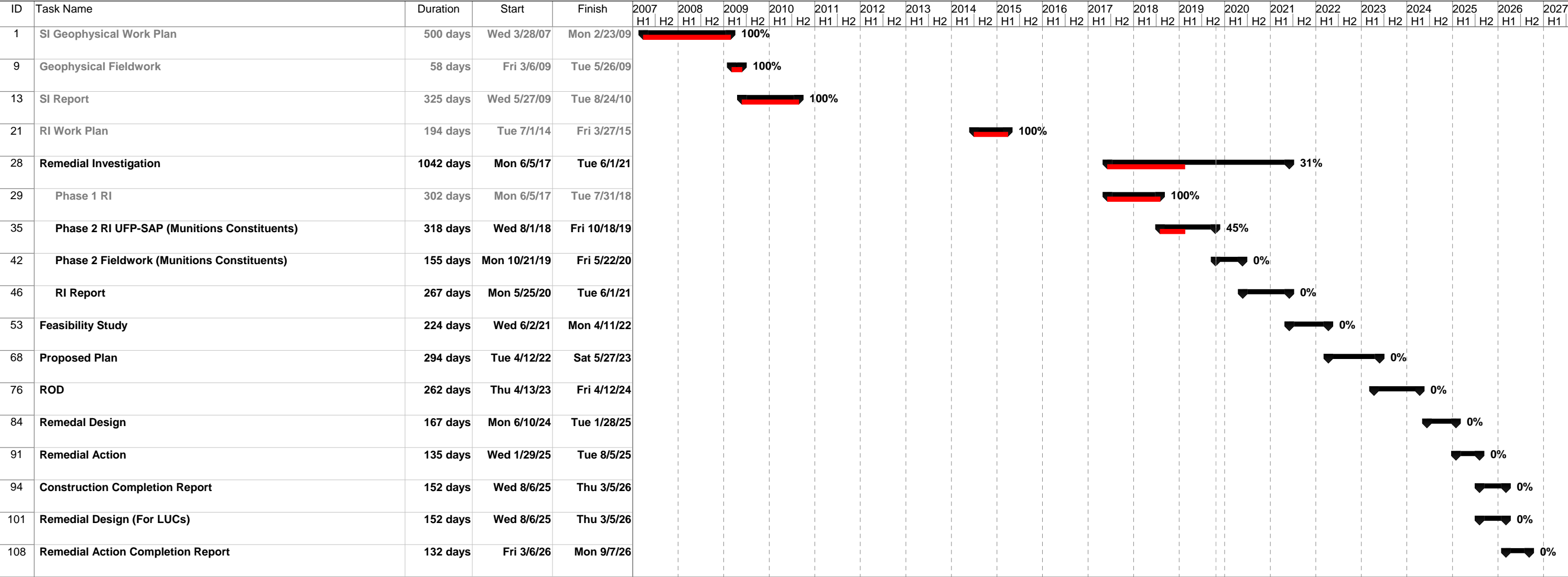


Figure 4-3
UXO 013A (Operable Unit 24) – 81mm Mortar Range Impact Area Schedule
UXO 013B (Operable Unit 30) – 81mm Mortar Range Firing Fans Schedule



Legend

Summary

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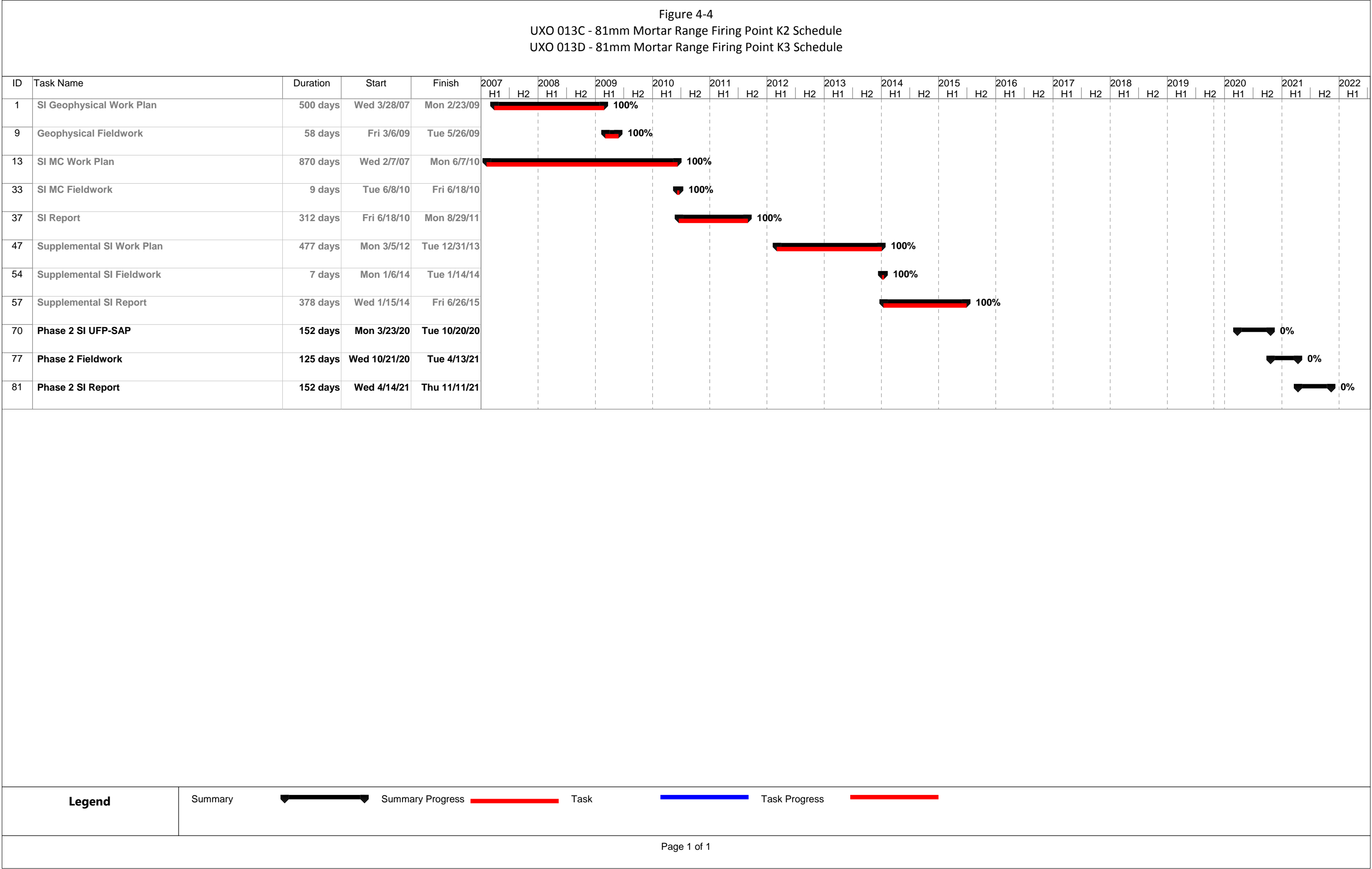
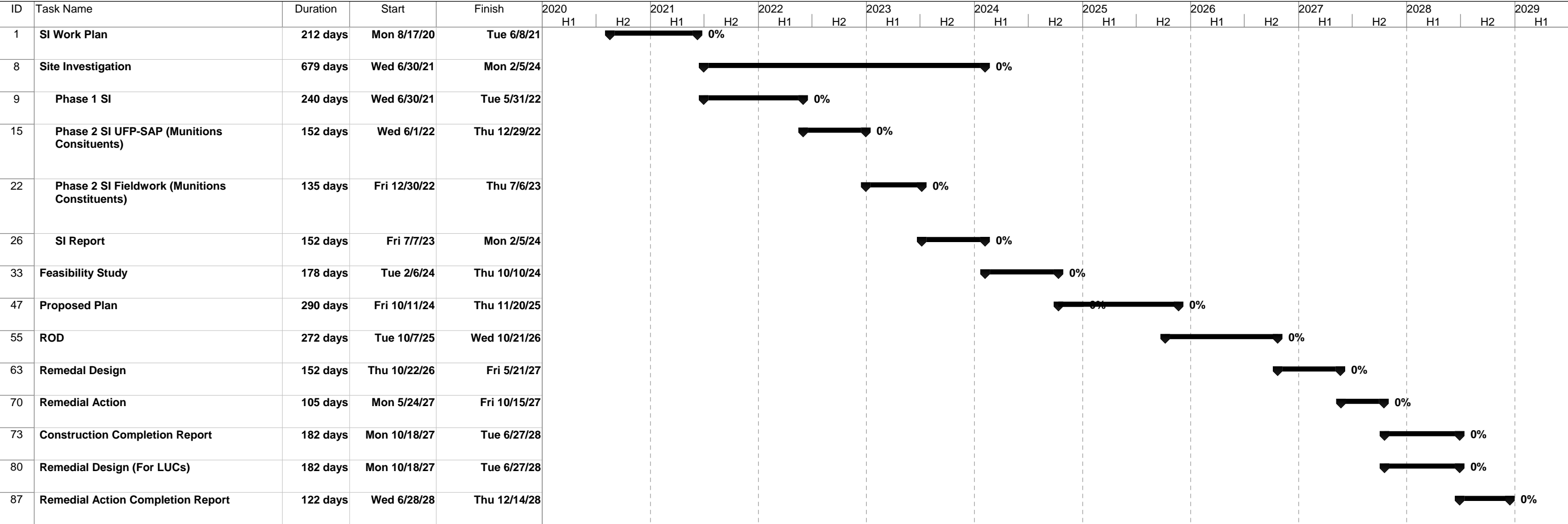


Figure 4-5
UXO 018 (Operable Unit 37) - Marine Corps Flying Field Bombing Targets Schedule



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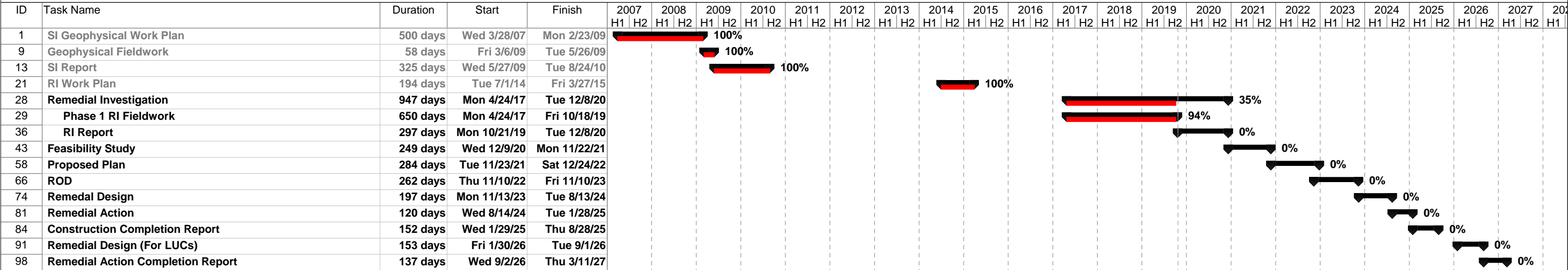
Summary

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Figure 4-6
UXO 019 (Operable Unit 31) - Grenade Field Schedule



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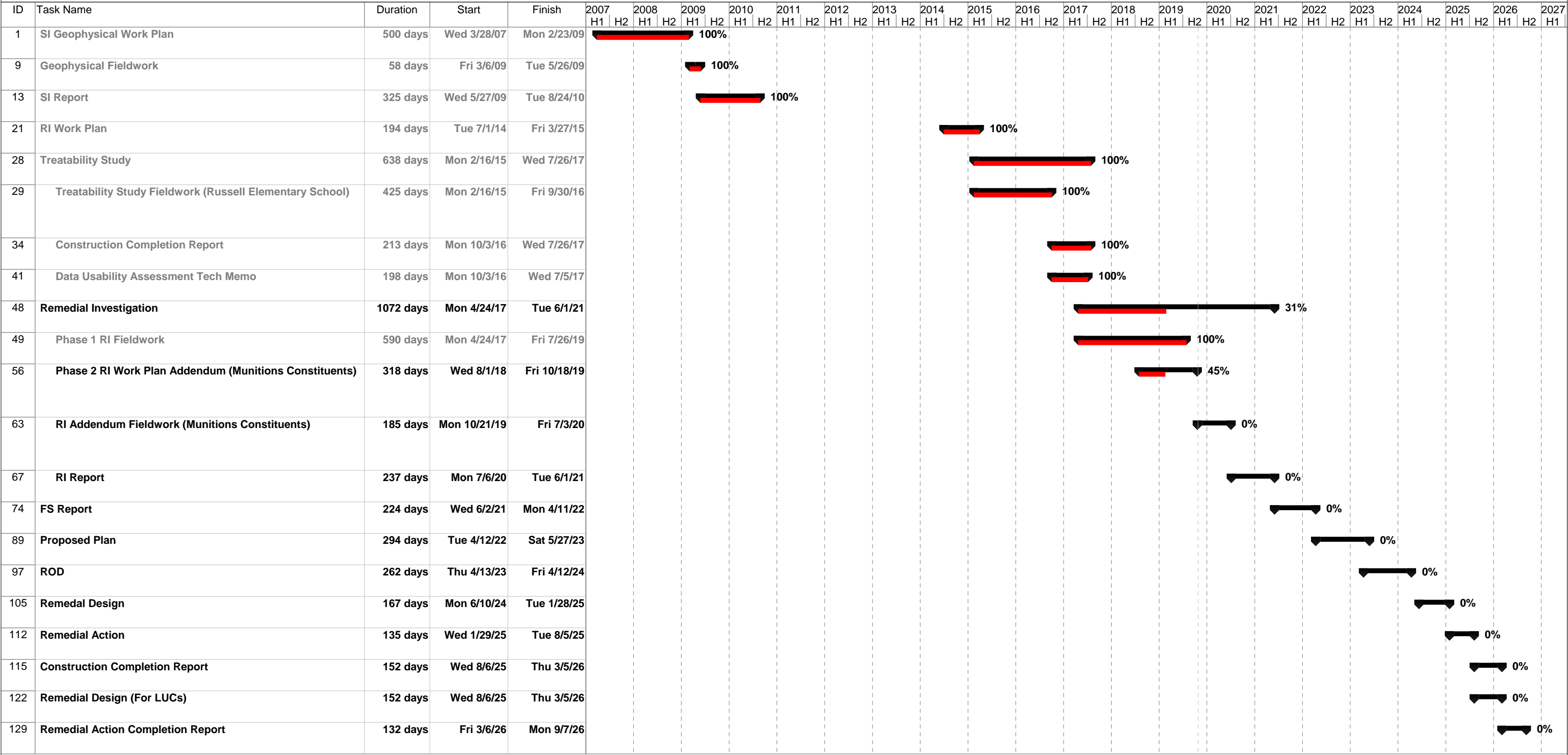
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Figure 4-7
UXO 021 (Operable Unit 32) - Combat Area C Field Firing Range Schedule



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Figure 4-8
UXO 024 - Combat Area E Field Firing Range Schedule

ID	Task Name	Duration	Start	Finish	2012	2013	2014	2015	2016	2017	2018	2019	2020
					H1	H2	H1	H2	H1	H2	H1	H2	H1
1	SI	486 days	Mon 4/16/12	Mon 2/24/14	100%								
2	Work Plan	284 days	Mon 4/16/12	Thu 5/16/13	100%								
9	Fieldwork	32 days	Thu 4/25/13	Fri 6/7/13	100%								
12	Report	186 days	Mon 6/10/13	Mon 2/24/14	100%								

Legend

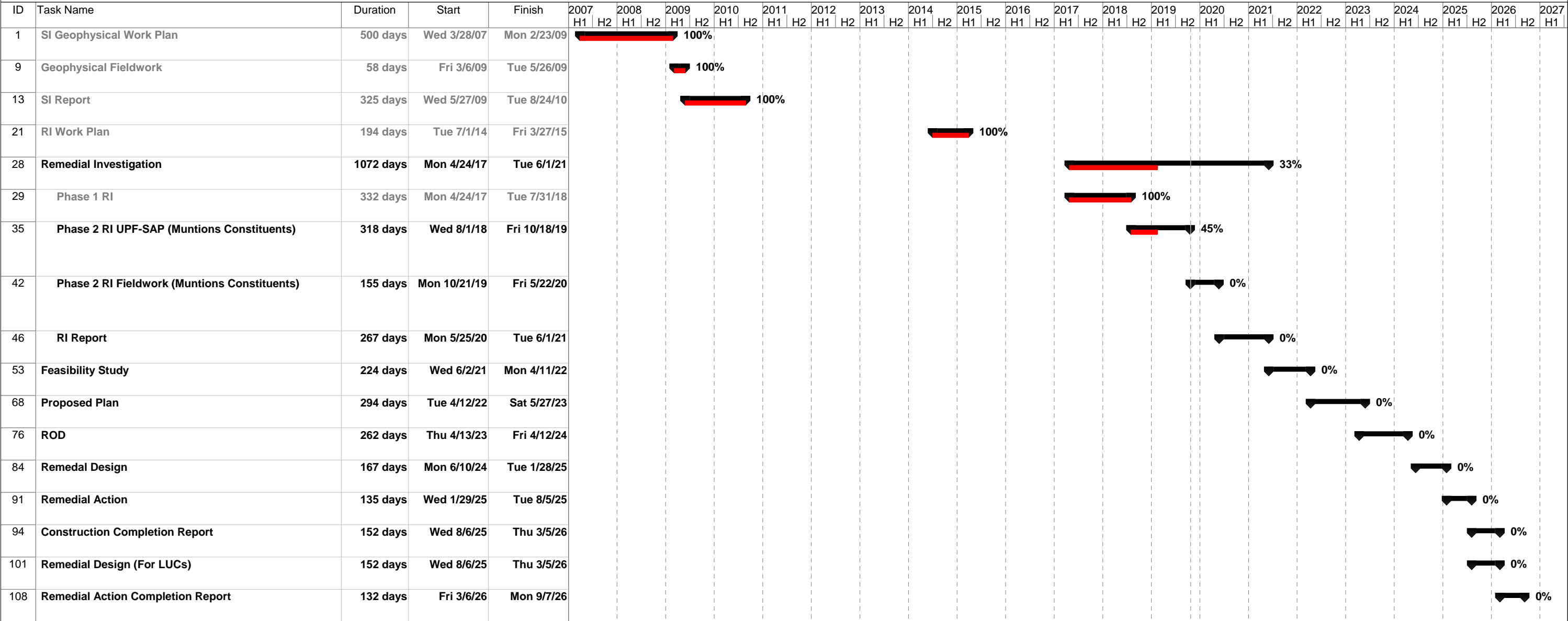
Summary

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Figure 4-9
UXO 025 (Operable Unit 33) - Quantico Clubs Schedule



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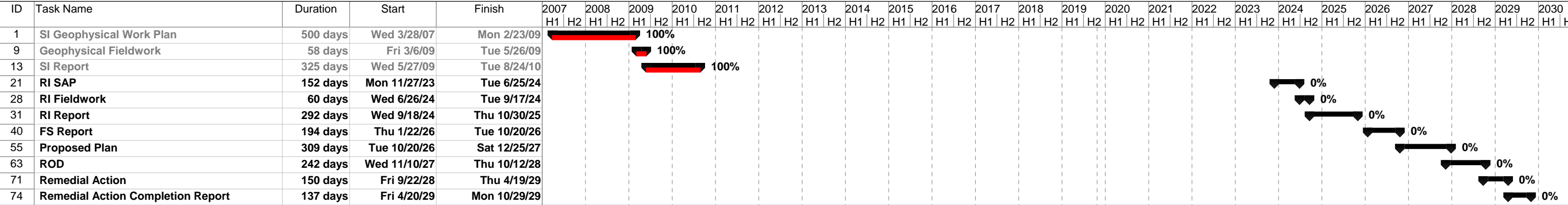
Summary

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Figure 4-10
UXO 026 (Operable Unit 34) - Chopawamsic Creek Skeet Range No. 1 Schedule



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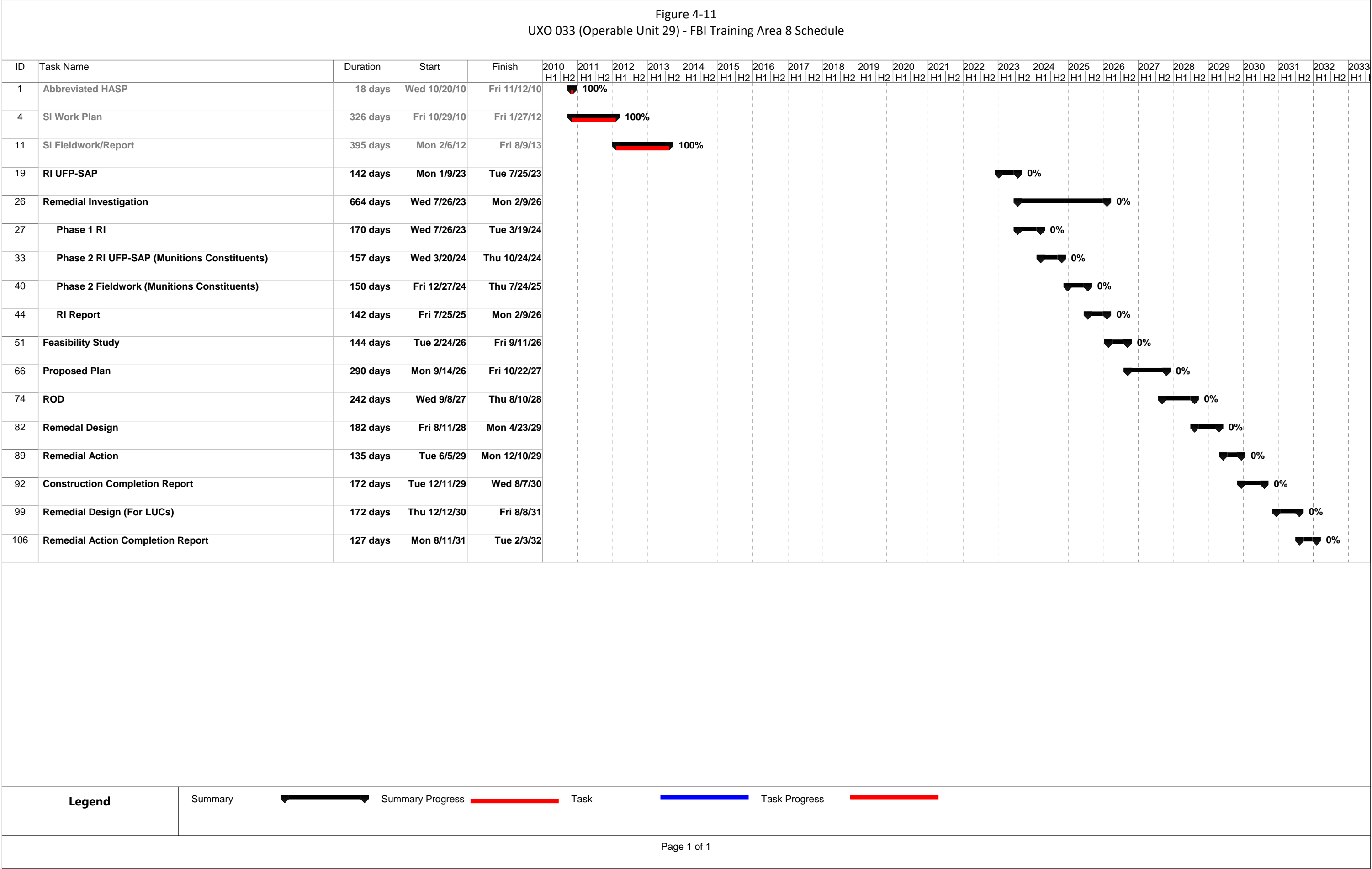
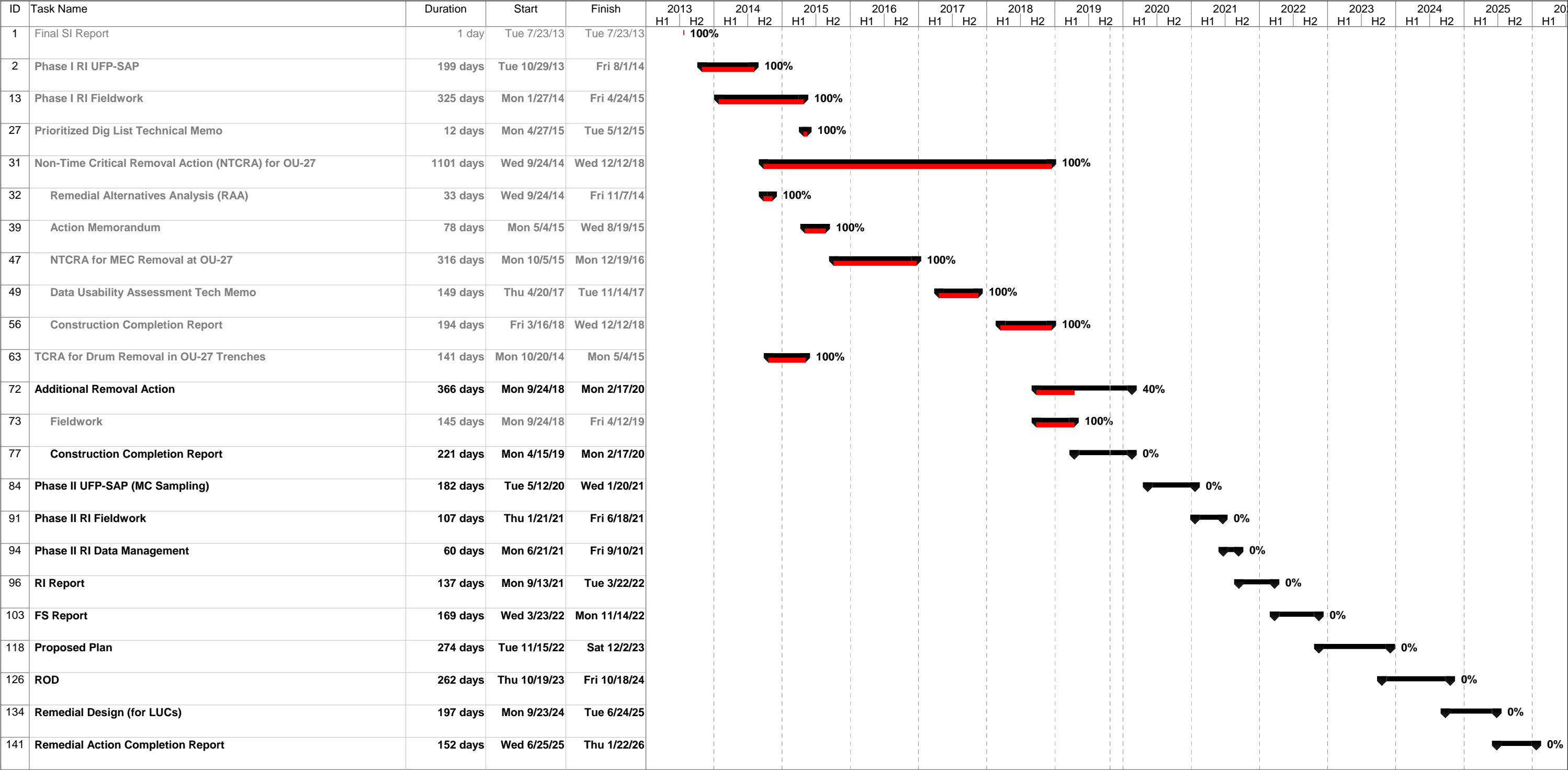


Figure 4-12
UXO 034 (Operable Unit 27) - Lunga Recreation Area South Schedule



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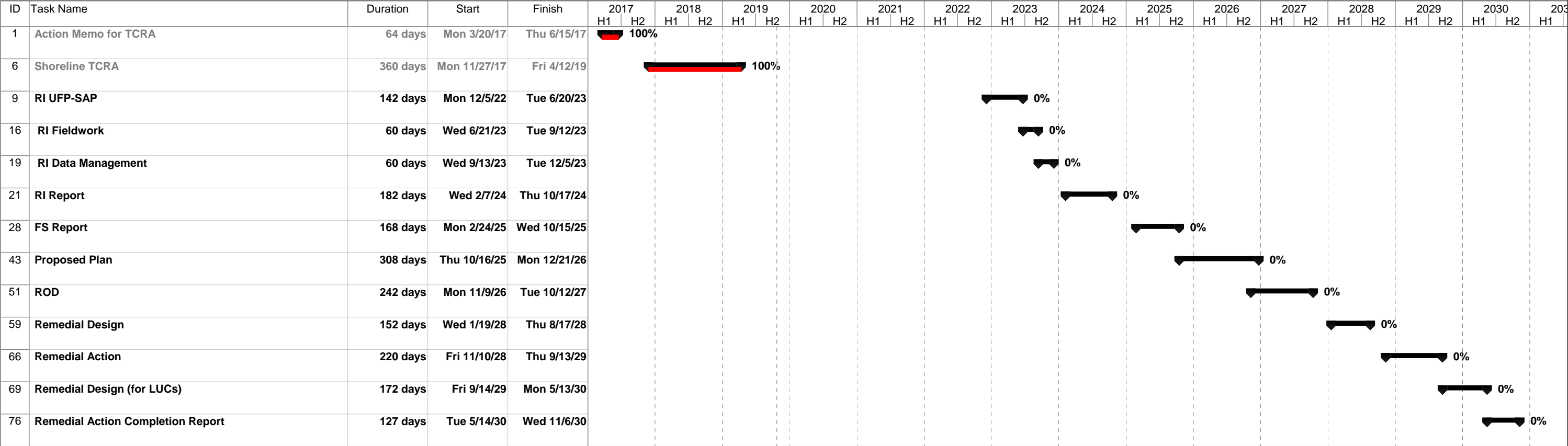
Summary

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Figure 4-13
UXO-035 (Operable Unit 39) - Lunga Reservoir Schedule

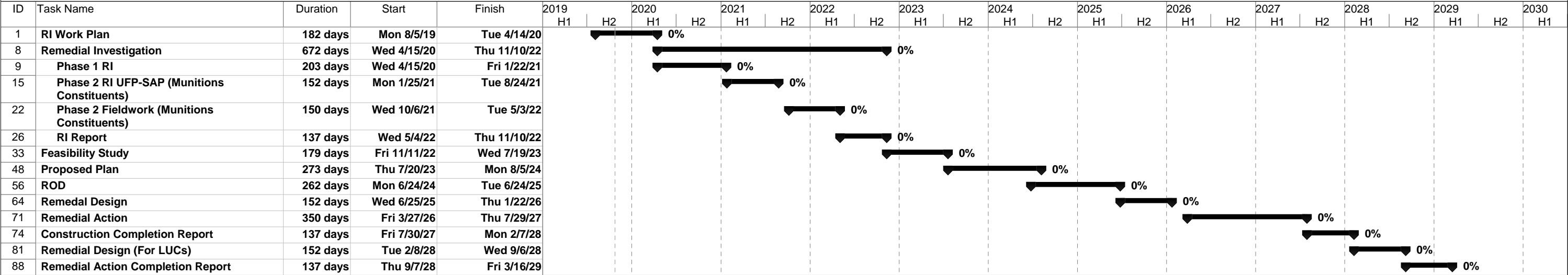


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Summary

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Figure 4-14
UXO 036 (Operable Unit 40) - Grenade Pit Schedule



Legend

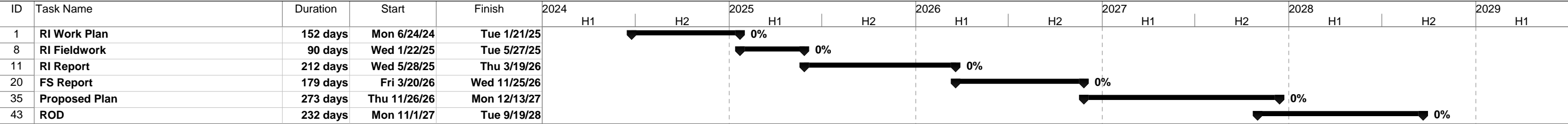
Summary

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Figure 4-15
UXO 037 (Operable Unit 41) - Chopawamsic Creek Range Fans Schedule



Legend

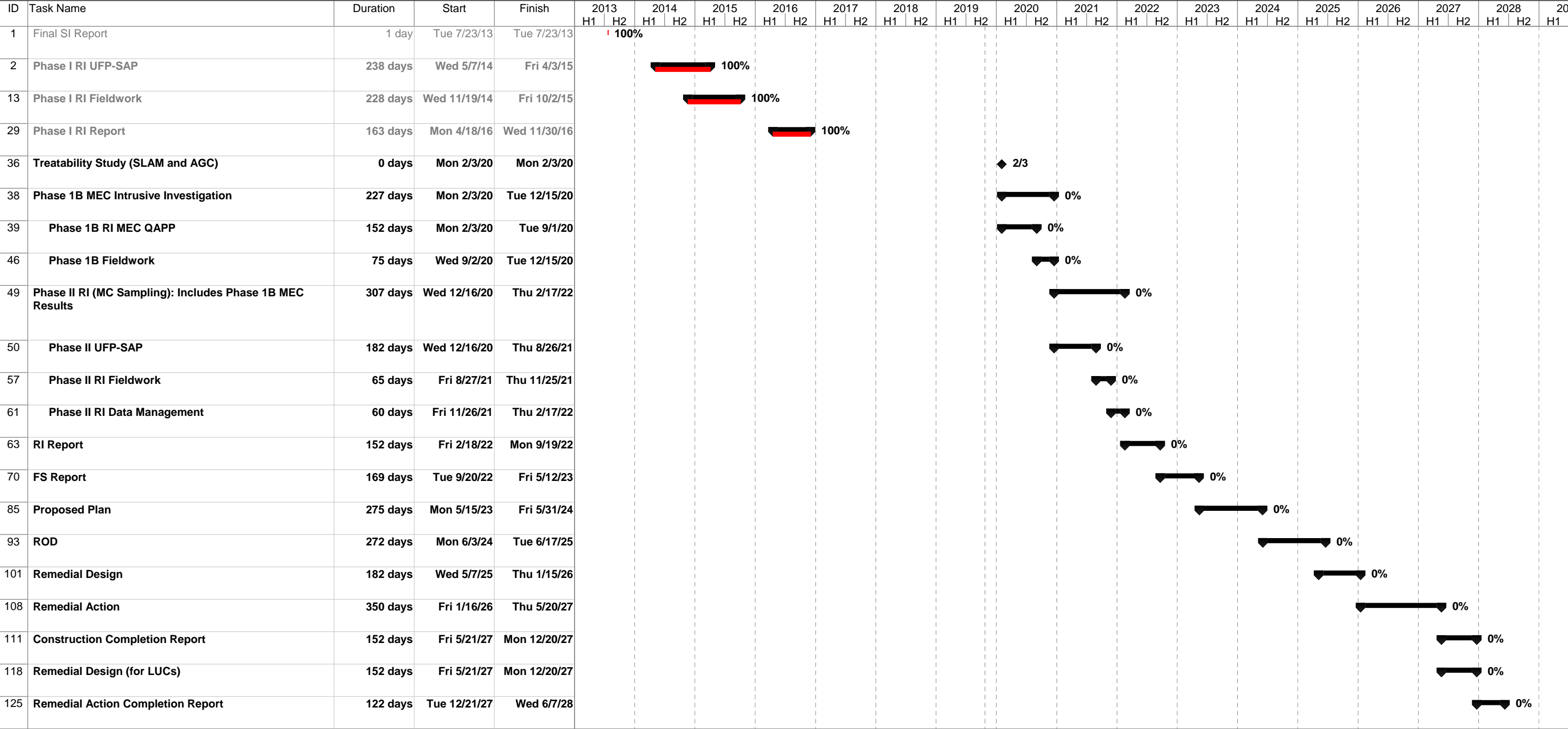
Summary

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Figure 4-16
UXO 038 (Operable Unit 35) - Lunga Recreation Area Central Schedule



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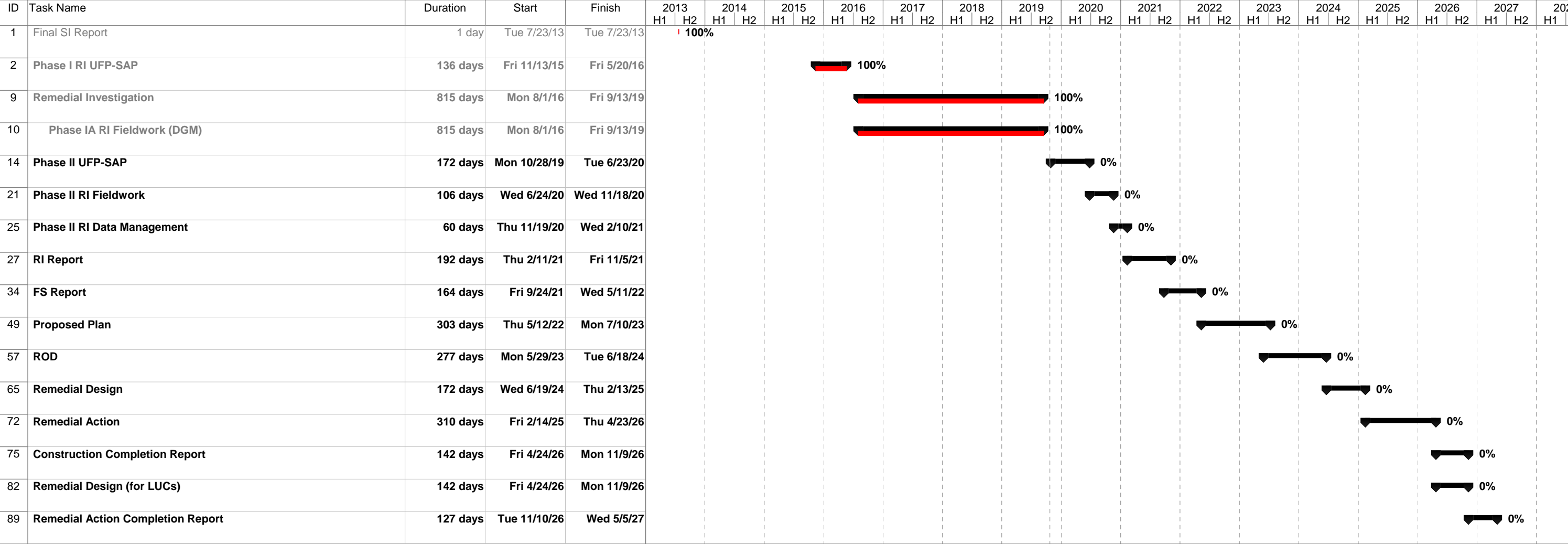
Summary

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Figure 4-17
UXO 039 (Operable Unit 36): Lunga Recreation Area North Schedule



Legend

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Five-Year Review

The Fourth FYR Report was finalized in June 2018 (CH2M, 2018). **Figure 5-1** presents the proposed schedule for FYR of MCBQ.

5.1 Recommendations and Follow-up Actions from the Fourth Five-Year Review

Tables 5-1 through 5-5 present the recommendations from the Fourth FYR along with the actions taken to address the recommendations for the following IRP sites, respectively:

- Site 4 (OU 4) – Old Landfill, DRMO Scrapyard, and Building 669
- Site 95 (OU 19) – Building 2101 Paint Booth Sump
- Site 99 (OU 12) – Quantico Embayment
- Site 100 (OU 13) – Chopawamsic Creek
- Site 104 (OU 21) – Building 2113 Underground Tank Loading/Unloading Area

Table 5-1. Site 4 Recommendations and Follow-up Actions from the Fourth Five-Year Review

Issue	Recommendations/Follow-up Actions	Milestone Date	Status
NA	Continue to inspect the small depressions and vehicle ruts on landfill cover and repair (e.g., fill and replant) if size/depth expands and ponding occurs.	October 2016	Complete
NA	Fill groundhog holes need per the O&M Manual. Continue to inspect for groundhog holes and fill as needed. Determine if a groundhog control program is necessary.	Ongoing	Ongoing
NA	Secure the lock at monitoring well OLFMW019A and consider installing protective bollards due to the apparent construction activity in this area.	Lock – December 2016 Bollards – September 2018	Lock – Complete Bollards – Complete
NA	Label monitoring well OLFMW023.	December 2016	Complete
NA	Add a lock to monitoring well OLFMW012.	December 2016	Complete
NA	Repair the gate and section of leaning fence on the western side of the site.	September 2018	Complete (October 2018)
NA	Proceed with DON's intention to combine the LTM events for Site 4 and Site 99 for the purpose of optimization.	September 2018	Complete
NA	Update the 2008 O&M Manual to reflect current practice, including that formal wetland inspections are no longer being conducted.	September 2018	Ongoing
NA	Document in NIRIS the current spatial extent of the fence around Site 4.	September 2018	Ongoing
NA	Determine the current LUC boundary for Site 4 and document in NIRIS.	September 2018	Complete

Notes:

NA = Not applicable

NIRIS = Naval Installation Restoration Information Solution

O&M = operations and maintenance

Table 5-2. Site 95 Recommendations and Follow-up Actions from the Fourth Five-Year Review

Issue	Recommendations/ Follow-up Actions	Milestone Date	Status
Whether the groundwater treatment amendment identified in the ROD (ORC) can meet RGs is inconclusive based on treatability study results.	Conduct additional investigation to delineate the northern boundary of the groundwater plume. Prepare Focused FS to determine path forward for Site 95: document any post-ROD changes appropriately.	June 2018	Ongoing
Construction of residential building at the site.	Determine if performance testing of the passive subslab depressurization system was conducted after construction.	June 2017	Complete
	Replace/remove the closed caps on the vent pipes to allow airflow	March 2017	Ongoing
	Determine if there are penetrations in the vapor barrier (e.g., utility piping) and ensure penetrations are appropriately sealed.	June 2017	Complete
NA	Develop clean-up levels for additional COCs.	June 2018	Complete (March 2018); through Final SAP
NA	Complete LUC Remedial Design and implement LUCs.	December 2018	Ongoing
NA	Inventory status of monitoring wells at Site 95. Properly abandon, secure, and/or repair as appropriate.	December 2018	Complete (December 2018)
NA	Properly abandon open 2-inch boreholes on the north side of the BEQ.	December 2018	Complete (December 2018)
NA	Analyze groundwater samples for 1,4 dioxane during upcoming Focused FS Groundwater Investigation.	June 2018	Complete (January 2019)

Notes:

BEQ = bachelor enlisted quarters

COC = contaminant of concern

ORC = oxygen release compound

RG = remedial goal

Table 5-3. Site 99 Recommendations and Follow-up Actions from the Fourth Five-Year Review

Issue	Recommendations/ Follow-up Actions	Milestone Date	Status
NA	Install in-water signage to complete LUC implementation.	September 2017	The in-water signage was installed in December 2017; however, that winter the Potomac River froze over and the ice destroyed the newly installed piles. The QPMT agreed in October 2018 that the in-water signage was not feasible. The LUC RDs are in the process of being amended; however, it is important to note that the signs along the shoreline are still present and do fulfill the notification requirements for the site.
NA	Determine if the absence of cap sediment at Station 03 during the Year 1 LTM sediment profile imaging of the habitat enhancement cap is a concern that requires follow-up action.	September 2018	Complete; during subsequent LTM events (through Year 4) there were no issues with Station 03.

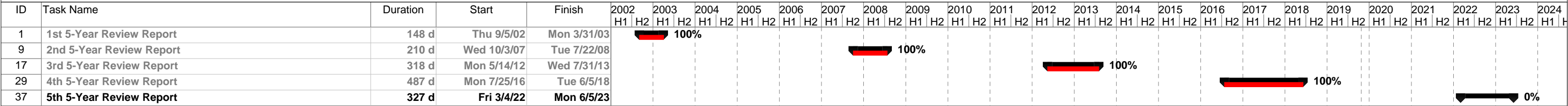
Table 5-4. Site 100 Recommendations and Follow-up Actions from the Fourth Five-Year Review

Issue	Recommendations/ Follow-up Actions	Milestone Date	Status
NA	Install signs to complete LUC implementation.	September 2017	The in-water signage was installed in December 2017; however, that winter the Potomac River froze over and the ice destroyed the newly installed piles. The QPMT agreed in October 2018 that the in-water signage was not feasible. The LUC RDs are in the process of being amended; however, it is important to note that the signs along the shoreline are still present and do fulfill the notification requirements for the site.
NA	Complete and document the LUC inspections in future reports.	December 2018	Ongoing

Table 5-5. Site 104 Recommendations and Follow-up Actions from the Fourth Five-Year Review

Issue	Recommendations/ Follow-up Actions	Milestone Date	Status
Whether the petroleum encountered during construction trenching activities upgradient of Site 104, but not within the site boundary, is comingled with or impacting the plume at Site 104.	An investigation should be completed to determine if the petroleum encountered is comingled with or impacting the plume at Site 104.	October 2018	Ongoing
NA	Conduct a groundwater sampling event prior to preparing the remedial design to obtain current data.	October 2018	Ongoing
NA	Site remediation goals that are not based on maximum contaminant levels should be updated before LTM is initiated.	May 2018	Ongoing
NA	Cut back high vegetation around monitoring wells.	October 2018	Complete (April 2019)
NA	Properly abandon or secure monitoring well M13TW009, which was observed without a protective casing.	October 2018	Ongoing; this will be completed as part of the investigation.

Figure 5-1
Five-Year Reviews Schedule



Legend

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*1st and 2nd 5-Year Reviews addressed Site 4 only. All subsequent reviews will address multiple sites.

Basewide Land Use Control Summary

The following five IRP sites have LUCs identified as part of the remedy listed in the ROD or LUC Remedial Design:

- Site 4 (OU 4) – Old Landfill, DRMO Scrapyard, and Building 669
- Site 95 (OU 19) – Building 2101 Paint Booth Sump
- Site 99 (OU 12) – Quantico Embayment
- Site 100 (OU 13) – Chopawamsic Creek
- Site 104 (OU 21) – Building 2113 Underground Tank Loading/Unloading Area

The locations of these IRP sites are identified on **Figure 3-1** and the locations of the LUCs recorded within the NIRIS LUC Tracker Database Module for Site 4, Site 95, and Site 99 are identified on **Figure 6-1**. Currently, no LUCs have been formally identified for the MRSs.

The LUCs identified for each of these five sites are summarized below with the corresponding document.

6.1 Site 4 (Operable Unit 4) – Old Landfill, DRMO Scrapyard, and Building 669

The following LUC performance objectives were identified in the Site 4 ROD (NAVFAC, 2007):

- No residential use.
- No use/access to shallow groundwater, except for environmental sampling.
- All other uses of groundwater require Navy approval. The acceptability of such use will be evaluated based on the chemical concentrations present in the groundwater at the time of such use and whether such use would permanently damage the barrier layers at the site.
- Prevention of any activities that may disturb the barrier layers, the shoreline erosion controls, or fence.
- Maintain the integrity of any current or future remedial or monitoring system.

As specified in the LUC Remedial Design for Site 4, included as **Appendix E** of the LTM Plan for Site 4-Old Landfill (Tetra Tech, 2008a), the Navy will:

- Develop a LUC area map for MCBQ to indicate the known boundary of Site 4 and the areas where waste material has been found outside the site boundary. The legend will identify that no excavation is allowed within the boundaries shown without approval from the MCBQ NREA branch through the MCBQ excavation program. The NREA will obtain approval from NAVFAC Washington, EPA, and VDEQ before authorizing any disturbance of the landfill.
- Prevent the use of the landfill for anything other than uses consistent with the selected Remedial Design. Because Site 4 currently is located within the "clear zone" for the airfield, identified uses for the site are limited to agricultural use only.
- Prevent the disturbance of or contact with the waste materials in the landfill without prior written approval from the NREA Branch through the MCBQ excavation permit program. The NREA will obtain approval from NAVFAC Washington, EPA, and VDEQ before authoring any disturbance of the landfill.
- If disturbance of the landfill is authorized, the work shall be done in accordance with federal and state hazardous waste and solid waste regulations.
- Prevent use/access to groundwater, except for environmental sampling.

- Place this LUC Remedial Design in the Information Repositories and Administrative Record and send copies to EPA and VDEQ.
- The Navy shall not modify or terminate the LUCs, implantation actions, or modify land use without prior approval by EPA and VDEQ. The Navy shall seek prior approval before any anticipated action that may disrupt the effectiveness of the LUCs or any action that may alter or negate the need for LUCs.
- Any activity that is inconsistent with the LUC objectives or use restriction, or any other action that may interfere with the effectiveness of the LUCs will be addressed by the Navy as soon as practicable, but in no case will the process be initiated later than 10 days after the Navy becomes aware of the breach.
- The Navy will notify EPA and VDEQ as soon as practicable but no longer than 10 days after discovery of any activity that is inconsistent with the LUC Objectives and Requirements or any other action that may interfere with the effectiveness of the LUCs. The Navy will notify EPA and VDEQ regarding how the Navy has addressed or will address the breach within 10 days of sending EPA and VDEQ notification of the breach.
- The Navy will notify EPA and VDEQ 45 days in advance of any proposed land use changes that are inconsistent with the LUCs objectives or the selected remedy.
- The Navy will provide notice to EPA and VDEQ at least 6 months prior to any transfer or sale of Site 4 so that EPA and VDEQ can be involved in discussions to ensure that appropriate provisions are included in the transfer terms or conveyance documents to maintain effective LUCs. If it is not possible for MCBQ to notify EPA and VDEQ at least 6 months prior to any transfer of sale, then MCBQ will notify EPA and VDEQ as soon as possible but no later than 60 days prior to the transfer or sale of any property subject to the LUCs. In addition to the land transfer notice and discussion provisions above, the Navy further agrees to provide EPA and VDEQ with similar notice, within the same time frames, as to federal-to-federal transfer of property. The Navy shall provide a copy of executed deed or transfer assembly to EPA and VDEQ.
- Monitoring of the environmental use restrictions and controls will be conducted per the schedule and in accordance with the checklist.
- The monitoring results will be included in a separate report or as a section of another environmental report, if appropriate, and provided to EPA and VDEQ in accordance with the schedule. The monitoring reports will be used in preparation of the FYR to evaluate the effectiveness of the remedy.
- Conduct FYRs as required by the National Contingency Plan and the FFA as long as contamination remains onsite at levels greater than ROD documented applicable or relevant and appropriate retirement regulatory standards or risk levels.

The LUCs have been established at Site 4.

6.2 Site 95 (Operable Unit 19) – Building 2101 Paint Booth Sump

The ROD for Site 95 identified the following regarding LUCs (Tetra Tech, 2008d):

- Groundwater use restrictions will be implemented to ensure that contaminated groundwater is not used as a source of potable water.
- Construction restrictions will be implemented to ensure that mitigative measures designed to eliminate unacceptable risks associated with vapor intrusion, if required, are incorporated into new construction (commercial or residential) at the site.
- Excavation restrictions will be implemented to ensure that construction workers are not exposed (dermal or inhalation) to groundwater contaminated with unacceptable levels of COCs during construction activities.

These restrictions will be developed, with EPA and VDEQ concurrence, as part of a Remedial Design for LUCs and will be maintained until COC concentrations attain preliminary remediation goals.

The LUC Remedial Design for Site 95 will be completed and LUCs established once a path forward for the site is determined based on planned FS Addendum and potential ROD Amendment. The LUC boundary is currently identified within the NIRIS LUC Tracker Database Module for Site 95.

6.3 Site 99 (Operable Unit 12) – Quantico Embayment

The following LUC performance objectives were identified in the Site 99 ROD (NAVFAC, 2011a):

- Continued maintenance of signs (by MCBQ) identifying the existing fish advisories in the Quantico Embayment area until post-construction monitoring indicates that fish tissue concentrations have reached acceptable levels.
- Restrictions on land use to limit any activity that would impact the physical integrity of the sediment cap materials or disturb sediment (for example, boat anchoring or landing craft operations, clamming, dredging, excavation, construction, or changes to outfalls in the cap area), as appropriate.
- Installation of signs to prevent compromise of the physical integrity of the cap and sediment disturbance.
- Recognition of air-use restrictions (Air Installations Compatible Use Zones [AICUZ]) at the Base, which consist of “(a) land areas upon which certain uses may obstruct the airspace or otherwise be hazardous to aircraft operations, and (b) land areas that are exposed to the health, safety or welfare hazards of aircraft operations.” Although AICUZs are not specifically part of the remedy, they indirectly support the remedy by discouraging incompatibilities and development of the restricted use area.

As specified in the Site 99 LUC Remedial Design (NAVFAC, 2016a), the Navy will:

1. Indicate where LUCs have been imposed and annotate LUC objectives in the Navy Geographic Information System (GIS) database (NIRIS LUC Tracker Database Module) and real estate summary map(s) for the installation, and follow LUC-related procedures pertaining to ground-disturbing activity and changes in land use, as per MCBQ LUC Control Practices. MCBQ LUC Practices require that all new development projects at the facility are reviewed by the MCBQ NREA Branch, National Environmental Policy Act Section, and all land-disturbance activities at the facility require an excavation permit issued by Facilities and Logistics Services. These reviews include verification using the MCBQ GIS and consultation with the MCBQ Remediation Program Manager to ensure that no LUCs are violated. The Navy will notify EPA and VDEQ in advance of any changes to these procedures that could impact the effectiveness of the LUCs.
2. Maintain a comprehensive list of LUCs with associated boundaries and expected durations. This comprehensive list will be maintained in the NIRIS.
3. Conduct annual inspections of the LUCs in accordance with the Site 99 Quantico Embayment LUC inspection checklist, and provide a yearly report to EPA and VDEQ. Yearly reports will identify all implementation actions that have been taken and need to be taken to maintain LUCs according to the ROD (NAVFAC, 2011a), including inconsistent land use activity at the site, any LUC failures, and the corrective action taken or proposed for each.
4. Report and notify regulatory agencies of the following:
 - a. Land Use Changes – Notify EPA and VDEQ at least 45 days in advance of: proposals for changes in land use that would be inconsistent with use restrictions and exposure assumptions described in the ROD; any anticipated action that may disrupt LUC effectiveness; or any action that may alter or negate the need for LUCs.
 - b. Activities or Actions Inconsistent with LUCs – Notify EPA and VDEQ as soon as practicable, presumptively within 10 working days, of the discovery of activity at Site 100 inconsistent with the LUC objectives, and then promptly investigate and take appropriate corrective action. Such notice will also outline the steps to be taken to 1) evaluate the effectiveness of LUCs; 2) develop appropriate corrective action; and 3) assess lessons learned and prevent recurrence. For cases in which such inconsistent activity does not create an

imminent and substantial threat to human health or the environment, investigation will normally commence within 60 days.

- c. Transfer or Sale of Property – Notify EPA and VDEQ 6 months in advance of any anticipated transfer, out of Navy custody and control, of real property subject to LUCs. If 6 months' advance notice is not reasonably possible, as much advance notice will be given as is reasonably possible, but in any event not less than 60 days. The Navy shall provide a copy of the executed deed or transfer documents to EPA and VDEQ.
 - d. LUC Related Policies – Notify and invite comment from EPA and VDEQ at least 14 days prior to making changes to internal LUC-related policies or procedures, such as the above-mentioned Navy instructions, if such changes are reasonably likely to negatively impact the effectiveness of LUCs.
5. Obtain EPA concurrence, in consultation with VDEQ, prior to modifying or terminating the LUC objectives or required LUC implementation actions.
 6. Conduct 5-year reviews of the remedy and prepare a report that provides the results to the EPA and VDEQ.

A Remedial Action Construction Report (RACR) was signed by EPA in April 2018. The LUC boundary is currently identified within the NIRIS LUC Tracker Database Module for Site 99.

6.4 Site 100 (Operable Unit 13) – Chopawamsic Creek

The following LUC performance objectives were identified in the Site 100 ROD for Area No. 3 (NAVFAC, 2011b):

- Restrict land use and activities that could disturb sediments, except for purposes of implementing and maintaining the remedy.
- Prevent unauthorized excavation and dredging into contaminated sediments.
- Prevent activities that could affect the integrity of the wetland (that is, no anchoring, no wake zones, and no unauthorized access).

As specified in the Site 100 LUC Remedial Design (NAVFAC, 2015), the Navy will:

1. Indicate where LUCs have been imposed and annotate LUC objectives in the Navy GIS database (NIRIS LUC Tracker Database Module) and real estate summary map(s) for the installation, and follow LUC-related procedures pertaining to ground-disturbing activity and changes in land use, as per MCBQ LUC Control Practices. MCBQ LUC Practices require that all new development projects at the facility are reviewed by the MCBQ NREA Branch, National Environmental Policy Act Section, and all land-disturbance activities at the facility require an excavation permit issued by Facilities and Logistics Services. These reviews include verification using the MCBQ GIS and consultation with the MCBQ Remediation Program Manager to ensure that no LUCs are violated. The Navy will notify EPA and VDEQ in advance of any changes to these procedures that could impact the effectiveness of the LUCs.
2. Maintain a comprehensive list of LUCs with associated boundaries and expected durations. This comprehensive list will be maintained in the NIRIS.
3. Conduct annual inspections of the LUCs in accordance with the Site 100 LUC inspection checklist and provide a yearly report to EPA and VDEQ. Yearly reports will identify all implementation actions that have been taken and need to be taken to maintain LUCs according to the ROD (NAVFAC, 2011b), including inconsistent land use activity at the site, any LUC failures, and the corrective action taken or proposed for each.
4. Continue enforcement of the existing United States Army Corps of Engineers (USACE) restricted area designation for the MCBQ airfield, enacted by MCBQ through USACE, which minimizes boat access to Area No. 3 from the Potomac River. Boats are currently prevented from entering Chopawamsic Creek from the Potomac River via lighted, floating, small craft intrusion barriers anchored in the channel at the mouth of the creek and its confluence with the river. This barrier was installed as part of a boating and fishing

restriction enacted in January 2011 under 33 CFR 334.235. This restriction supports the LUC portion of the Site 100 remedy by preventing large boats that may disturb sediment in the LUC areas from entering Chopawamsic Creek from the Potomac River. The Navy shall notify EPA and VDEQ in advance of any changes associated with the existing regulation that could impact the effectiveness of the LUCs.

5. Continue enforcement of the Protected Natural Area (PNA) that was established in August 1993 by the Commanding General of MCBQ that includes the wetlands in Area No. 3. The PNA is enforced by MCBQ through limited access to the creek (via a single trail, observation deck, and boat ramp near Russell Road) to minimize disturbance and help preserve the area in its natural state. The Navy shall notify EPA and VDEQ in advance of any changes associated with the PNA that could impact the effectiveness of the LUCs.
 6. Post and maintain four warning signs outlining the boundaries of each remedial footprint area (for a total of 8 signs) to notify the public of the restrictions to prevent re-exposure, resuspension, and transport of contaminated sediment.
 7. Because wake activities could disturb sediment in the remedial footprint areas, the Navy has decided to designate a portion of the creek a no wake zone. Therefore, the Navy will post and maintain three warning signs along the boundaries of the no wake area to notify the public of the no wake zone. In addition to the signs, the shallow depth of water in the creek and heavy vegetation present most of the year near the remedial footprint areas will help prevent wake activities in the creek.
 8. Report and notify regulatory agencies of the following:
 - a. Land Use Changes – Notify EPA and VDEQ at least 45 days in advance of: proposals for changes in land use that would be inconsistent with use restrictions and exposure assumptions described in the ROD; any anticipated action that may disrupt LUC effectiveness; or any action that may alter or negate the need for LUCs.
 - b. Activities or Actions Inconsistent with LUCs – Notify EPA and VDEQ as soon as practicable, presumptively within 10 working days, of the discovery of activity at Site 100 inconsistent with the LUC objectives, and then promptly investigate and take appropriate corrective action. Such notice will also outline the steps to be taken to 1) evaluate the effectiveness of LUCs; 2) develop appropriate corrective action; and 3) assess lessons learned and prevent recurrence. For cases in which such inconsistent activity does not create an imminent and substantial threat to human health or the environment, investigation will normally commence within 60 days.
 - c. Transfer or Sale of Property – Notify EPA and VDEQ 6 months in advance of any anticipated transfer, out of Navy custody and control, of real property subject to LUCs. If 6 months' advance notice is not reasonably possible, as much advance notice will be given as is reasonably possible, but in any event not less than 60 days. The Navy shall provide a copy of the executed deed or transfer documents to EPA and VDEQ.
 - d. LUC Related Policies – Notify and invite comment from EPA and VDEQ at least 14 days prior to making changes to internal LUC-related policies or procedures, such as the above-mentioned Navy instructions, if such changes are reasonably likely to negatively impact the effectiveness of LUCs.
 9. Obtain EPA concurrence, in consultation with VDEQ, prior to modifying or terminating the LUC objectives or required LUC implementation actions.
 10. Conduct 5-year reviews of the remedy and prepare a report that provides the results to the EPA and VDEQ.
- A RACR was signed by EPA in April 2018.

6.5 Site 104 (Operable Unit 21) – Building 2113 Underground Tank Loading/Unloading Area

The following LUC performance objectives were identified in the SWMU M-13 ROD (NAVFAC, 2014):

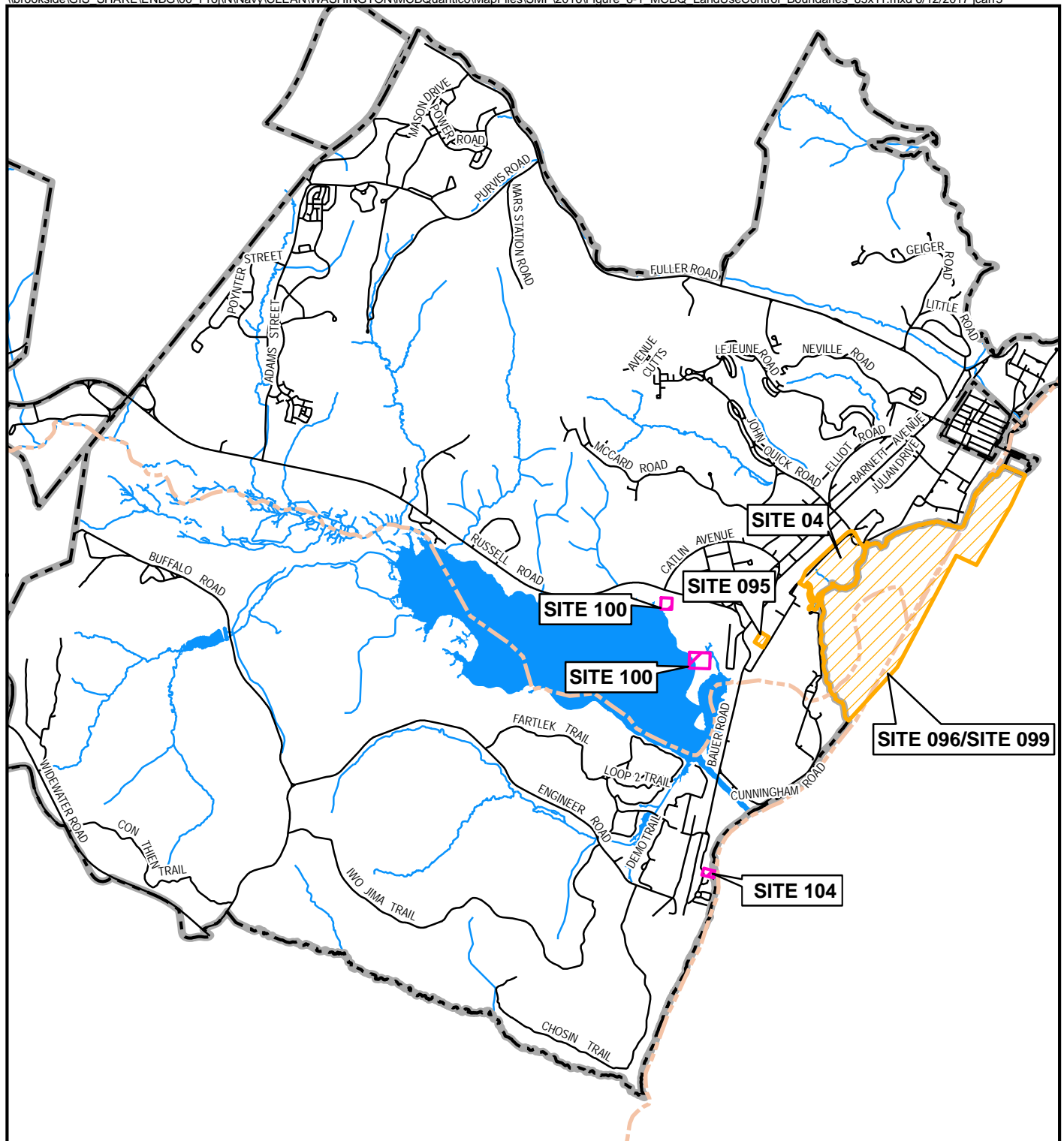
- Prohibit the use of groundwater as a potable water supply.
- Require excavation restrictions to ensure that future construction workers are not exposed to unacceptable levels of COCs in groundwater.

As specified in the SWMU M-13 LUC Remedial Design (NAVFAC, 2016b), the Navy will:









1. Indicate where LUCs have been imposed and annotate LUC objectives in the Navy GIS database (NIRIS LUC Tracker Database Module) and real estate summary map(s) for the installation, and follow LUC-related procedures pertaining to ground-disturbing activity and changes in land use, as per MCBQ LUC Control Practices. MCBQ LUC Practices require that all new development projects at the facility are reviewed by the MCBQ NREA Branch, National Environmental Policy Act Section, and all land-disturbance activities at the facility require an excavation permit issued by Facilities and Logistics Services. These reviews include verification using the MCBQ GIS and consultation with the MCBQ Remediation Program Manager to ensure that no LUCs are violated. The Navy will notify EPA and VDEQ in advance of any changes to these procedures that could impact the effectiveness of the LUCs.
2. Maintain a comprehensive list of LUCs with associated boundaries and expected durations. This comprehensive list will be maintained in the NIRIS.
3. Conduct annual inspections of the LUCs in accordance with the SWMU M-13 LUC inspection checklist and provide a yearly report to EPA and VDEQ. Yearly reports will identify all implementation actions that have been taken and need to be taken to maintain LUCs according to the ROD (NAVFAC, 2014), including inconsistent land use activity at the site, any LUC failures, and the corrective action taken or proposed for each.
4. Report and notify regulatory agencies of the following:
 - a. Land Use Changes – Notify EPA and VDEQ at least 45 days in advance of: proposals for changes in land use that would be inconsistent with use restrictions and exposure assumptions described in the ROD; any anticipated action that may disrupt LUC effectiveness; or any action that may alter or negate the need for LUCs.
 - b. Activities or Actions Inconsistent with LUCs – Notify EPA and VDEQ as soon as practicable, presumptively within 10 working days, of the discovery of activity at SWMU M-13 inconsistent with the LUC objectives, and then promptly investigate and take appropriate corrective action. Such notice will also outline the steps to be taken to 1) evaluate the effectiveness of LUCs; 2) develop appropriate corrective action; and 3) assess lessons learned and prevent recurrence. For cases in which such inconsistent activity does not create an imminent and substantial threat to human health or the environment, investigation will normally commence within 60 days.
 - c. Transfer or Sale of Property – Notify EPA and VDEQ 6 months in advance of any anticipated transfer, out of Navy custody and control, of real property subject to LUCs. If 6 months' advance notice is not reasonably possible, as much advance notice will be given as is reasonably possible, but in any event not less than 60 days. The Navy shall provide a copy of the executed deed or transfer documents to EPA and VDEQ.
 - d. LUC Related Policies – Notify and invite comment from EPA and VDEQ at least 14 days prior to making changes to internal LUC-related policies or procedures, such as the abovementioned Navy instructions, if such changes are reasonably likely to negatively impact the effectiveness of LUCs.

5. Obtain EPA concurrence, in consultation with VDEQ, prior to modifying or terminating the LUC objectives or required LUC implementation actions.
6. Conduct 5-year reviews of the remedy and prepare a report that provides the results to the EPA and VDEQ.

These LUCs are in-place with the exception of the identification in the NIRIS LUC Tracker Database Module.



Legend

-  Pending Land Use Control Boundary
-  Land Use Control Boundary
-  Main Road
-  Minor Road
-  County Line
-  Base Boundary
-  Stream
-  Lake/Creek/Reservoir



0 1,700 3,400
Feet

Figure 6-1
Land Use Control Boundaries
Site Management Plan
Marine Corps Base Quantico (MCBQ)
Quantico, Virginia

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Appendix A
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A-2 IRP Site Location Map - Mainside

Closed and Deferred Installation Restoration Program Sites

A.1 APS Sites

This section presents information on the sites that were identified in 1994 by the United States Environmental Protection Agency (EPA) Environmental Photographic Interpretation Center (EPIC) and included in the Marine Corps Base Quantico (MCBQ) Federal Facility Agreement (FFA) (EPA, 1998).

A.1.1 APS-01—Engineering Test Site Fill Areas (Site 49)

Site 49 is located in the eastern portion of the MCB to the south of Russell Road east of Interstate Route 95 in the northern portion of Training Area 4 within the Buffalo Test Area. The site consists of an area that was used by the Marine Corps Research, Development and Acquisition Command for the research, development, testing, and evaluation of equipment (NAVFAC, 1990). The exact tests performed and the frequency of testing are unknown. The site is comprised of four areas, which have been arbitrarily designated as Areas A, B, C, and D.

A review of aerial photography for the site showed evidence of ground disturbances, pits, and grading scars, indicating that the area may have been used as a disposal area from 1954 to 1981. Based on January 1993 aerial photography, the site appeared to be inactive; the area was generally covered with vegetation. During a 1998 site visit, there was evidence that heavy construction equipment operations had recently occurred in the general vicinity of Site 49. These activities (grading, plowing, and leveling) are likely attributable to construction equipment testing activities that are known to occur in the area. Mounded fill material was observed in some locations of the site. With the exception of Area C, most of the site is wooded.

The site was closed out under the Site Screening Process (SSP) phase of the Installation Restoration Program (IRP). An SSP investigation was conducted at the site during Fiscal Year (FY) 1998. The results of the investigation were presented to EPA Technical Support at a May 20, 2002 meeting and to the Quantico Project Managers Team (QPMT) at a June 5, 2002, meeting. The QPMT agreed that the site would proceed to a supplemental SSP investigation to determine whether there was a source of mercury in the soil at the site. The sampling design for the supplemental SSP investigation was presented to the QPMT at a July 18, 2002, meeting. Because mercury was not detected in the soil at the site during the supplemental SSP, the QPMT agreed on January 22, 2003 that no action was appropriate. A brief decision document (MCBQ IRP Closeout Document No. 28) was signed by the QPMT on March 5, 2003.

A.1.2 APS-02A—Previous Burn Pits (Site 22)

Site 22 is located along the eastern boundary of the MCBQ in the Mainside approximately 100 feet from the Potomac River at the southern end of Runway 20 at Marine Corps Air Facility Turner Field. Limited information is available regarding site operations. The site was used for fire training activities from approximately 1953 to 1962 and was graded over with fill by May 1962. The site appeared to be inactive by April 1964 (i.e., the burn pits were no longer visible, but dark stains on the ground surface were still apparent).

The burn pits and stained areas are no longer visible at the site. Also, during the SSP site visit, there was no evidence of stressed vegetation.

The site was closed out under the SSP phase of the IRP. A desktop audit with sampling (DTAWS) investigation was conducted at the site during FY1998. Based on the presence of dioxins/furans in the groundwater, the QPMT agreed at a December 14, 1999 meeting that the site would proceed to an SSP investigation prior to completion of a DTAWS report. An SSP investigation was completed at the site during FY2000. The results of the DTAWS and SSP investigations were presented in SSP Report No. 3 (Tetra Tech, 2001d). At a June 5, 2002 meeting the QPMT

agreed that no action was appropriate. A brief decision document (MCBQ IRP Closeout Document No. 19) was signed by the QPMT on September 4, 2002.

A.1.3 APS-02B—Runway 20 Fill Area

APS-02B is located along the eastern boundary of the MCB in the Mainside approximately 50 feet from the Potomac River and at the northern end of Runway 20 at Marine Corps Air Facility Turner Field. A 1962 aerial photograph indicated that the site may be a potential fill and/or waste disposal area (EPA, 1994); disturbed ground was observed. The site appeared to be inactive by April 1964, as the site was revegetated.

The site consists of an open grassy field, an overgrown paved area, and a river bank that is vegetated. No visible evidence of hazardous waste activities (disposal, stressed vegetation, etc.) was observed during the 2002 DTAWS site visit.

The site was closed out under the DTAWS phase of the IRP. A desktop audit (DTA) investigation was completed for the site in FY2001. The results of the DTA investigation were presented to the QPMT at an August 29, 2001 meeting, where the QPMT agreed to proceed to a DTAWS investigation. The sampling design for the DTAWS investigation was presented in the FY2002 DTAWS Work Plan Addendum (Tetra Tech, 2002). The results of the DTAWS investigation were presented at a March 5, 2003 QPMT meeting, where the QPMT agreed that no action was appropriate. A brief decision document (MCBQ IRP Closeout Document No. 27) was signed by the QPMT on April 23, 2003.

A.1.4 APS-02C—Interim Burn Pit and Fill Area (Site 23)

This site is located along the eastern boundary of the MCBQ in the Mainside adjacent to the Potomac River on the eastern side of Runway 20 at Marine Corps Air Facility Turner Field. Site L-12 (New Burn Pit) is located within the boundaries of APS-02C. The site was reportedly used as an active training area from approximately 1981 to 1985 (EPA, 1994). Based on a review of the historical aerial photography, the site consists of circular craters, mounded material, a burn pit, and a rectangular area of disturbed ground. Based on conversations with site personnel, it was determined that the craters were a result of small charge detonations that were used during bombing simulations for air shows conducted several years ago. A stormwater retention basin, which was previously identified in the EPIC report (EPA, 1994) as a large impoundment area, was constructed in the central portion of the site in January 1993. The storm water retention basin discharges to the Potomac River via an outfall pipe, located along the bank of the Potomac River.

During the SSP site visit, several piles of construction rubble were present in the vicinity of the burn pit (L-12), and the grate/drain in the center of burn pit contained standing water from a recent rainfall event. An odor of petroleum was noted at the burn pit during the 1994 field inventory. Ponded water is typically present in the storm water retention basin located in the central portion of the site.

The site was closed out under the SSP phase of the IRP. A DTAWS investigation was conducted at the site during FY1998. The QPMT agreed that the site would proceed to an SSP investigation prior to completion of a DTAWS report. An SSP investigation was conducted at the site during FY2000. The results of the DTAWS and SSP investigations were presented in SSP Report No. 3 (Tetra Tech, 2001d). At a June 6, 2002 meeting, the QPMT agreed that no action was appropriate. A brief decision document (MCBQ IRP Closeout Document No. 20) was signed by the QPMT on September 4, 2002.

A.1.5 APS-02D—Fire Training Area

This site is also referred to as Solid Waste Management Unit (SWMU) L-08. A description of the site is provided under the land-based (L) units, Section A.7.7.

A.1.6 APS-04A – Ammo Storage Facility Cleared Area

APS-04A is located in the mid-eastern portion of the MCBQ to the west of Interstate Route 95 in the southern portion of Training Area 6-B. In June 1962, the site appeared as a revegetated clearing located north of

Ammunition Bunkers 27117, 27118, and 27119. The EPIC identified the area as a possible waste disposal area (EPA, 1994).

During the 1994 field inventory and site visits conducted for the DTAWS and DTA processes, construction rubble and cut timber were observed to be present at the site. During the DTA site visit, a 55-gallon rusted metal drum was found lying on its side, along with other metal scraps. Scattered glass bottles dated in the early 1960s were also found throughout the site.

The site was closed out under the DTAWS phase of the IRP. A DTA investigation was completed for the site during FY1999. The results of the investigation were presented in final DTA Report No. 7 (Tetra Tech, 2000a). Because it was determined that a release of hazardous constituents may have occurred at the site, the QPMT agreed that the site should proceed to a DTAWS investigation. A DTAWS investigation was scheduled to be completed during FY2002. However, upon further examination of the site information (i.e., evaluation of historical activities/land use and the conductance of a site visit), a DTAWS evaluation was considered to be unnecessary. The results of the evaluation were presented at the April 9, 2002 QPMT meeting. The QPMT agreed that no action was appropriate during an April 10, 2002 site visit. A brief decision document (MCBQ IRP Closeout Document No. 14) was signed by the QPMT on May 16, 2002.

A.1.7 APS-04B—Ammo Storage Facility Disturbed Ground

APS-04B is located in the mid-eastern portion of the MCBQ to the west of Interstate Route 95 in the southern portion of Training Area 6-B. The EPIC identified the area as a possible waste disposal area (EPA, 1994). This site appeared as an area of disturbed ground in June 1962. The site was revegetated by July 1969.

During the 1994 field inventory and site visits conducted for the DTAWS and DTA processes, the site consisted of a small cleared area that may have been a historic home site. Stone and brick building materials were found scattered throughout the site during a recent site visit. Also, remnants of an old, hand-dug well were found approximately 15 feet from four stone corner foundation blocks on the eastern side of the site. Scattered glass bottles dated in the early 1960s were also found throughout the area along with disturbed terrain.

The site was closed out under the DTAWS phase of the IRP. A DTA investigation was completed for the site during FY1999. The results of the investigation were presented in final DTA Report No. 7 (Tetra Tech, 2000a). Because it was determined that a release of hazardous constituents may have occurred at the site, the QPMT agreed to proceed with a DTAWS investigation. A DTAWS was scheduled to be completed during FY2002. However, upon further examination of the site information (i.e., evaluation of historical activities/land use and the conductance of a site visit), a DTAWS evaluation was considered to be unnecessary. The results of the evaluation were presented at the April 9, 2002 QPMT meeting. The QPMT agreed that no action was appropriate during an April 10, 2002 site visit. A brief decision document (MCBQ IRP Closeout Document No. 14) for the site was signed by the QPMT on May 16, 2002.

A.1.8 APS-05—Route 637 Clear Cut

APS-05 is located in the mid-eastern portion of the MCBQ between Russell Road and Interstate Route 95. This site appeared as a large clear cut area within Training Area 6-B. This site was active sometime between 1953 and 1962 and completely vegetated by 1969. The EPIC identified the area as a possible waste disposal area (EPA, 1994).

No visible evidence of waste disposal activities was observed during the 1994 field inventory and the DTA site visit. An area of charred logs was identified during the 1994 field inventory.

The site was closed out under the DTA phase of the IRP. A DTA investigation was completed for the site during FY2002. The results of the DTA investigation were presented to the QPMT at a March 7, 2002 meeting, where the QPMT agreed that no action was appropriate. A brief decision document (MCBQ IRP Closeout Document No. 10) was signed by the QPMT on April 9, 2002.

A.1.9 APS-06A—Russell Road Waste Disposal Area (Site 52)

This unit is located in the eastern portion of the Guadalcanal Area north of the intersection of Russell Road and MCBQ Route 1. The EPIC identified the area as a possible waste disposal area (EPA, 1994). The site consists of approximately 6 acres and was potentially active in June 1962. The site was slightly covered by vegetation in July 1969 and completely covered by December 1971.

During site visits conducted for the DTAWS and SSP investigations, several 55-gallon drums and construction rubble were observed in several portions of the site. The site currently consists of wooded land with large topographic changes.

The site was closed out under the SSP phase of the IRP. An SSP investigation was conducted at the site during FY1998. The results of the investigation were presented to EPA Technical Support at a May 20, 2000 meeting and to the QPMT at a June 5, 2002 meeting. The QPMT agreed that no action was appropriate. A brief decision document (MCBQ IRP Closeout Document No. 15) was signed by the QPMT on June 6, 2002.

A.1.10 APS-06B—Russell Road Clear Cut

This unit is located in the mid-eastern portion of the MCBQ in the Guadalcanal Area of the Base on the southern side of Russell Road within Training Area 5-B. The site was active from at least 1962 through 1969. The site was first noted in June 1962; based on available aerial photography, the site appeared as an area of disturbed ground. The site was revegetated by March 1963 and then re-disturbed in July 1969. Since December 1970, there has been no further activity at the site. The site is clear cut on a periodic basis.

During site visits conducted for the DTA and DTAWS investigations, various types of construction debris (a telephone pole, steel cable, other debris) were observed in the western portion of the site. Although occasional hummocks were observed at the site, these hummocks may be attributable to forestry activities that are periodically conducted.

The site was closed out under the DTAWS phase of the IRP. A DTA investigation was conducted at the site during FY1998. The results of the DTA investigation were presented in DTA Report No. 1 (Tetra Tech 1998a), which documented that the QPMT agreed to proceed to a DTAWS investigation. A DTAWS investigation was conducted at the site during FY1999. The results of the DTAWS investigation were presented to the QPMT at an April 10, 2001 meeting. The QPMT agreed that no action was appropriate. A brief decision document (MCBQ IRP Closeout Document No. 3) was signed by the QPMT on August 30, 2001.

A.1.11 APS-07—Smith Lake Road Cleared Area (Site 21)

APS-07 is located north of Smith Lake Road in the southeast corner of the Guadalcanal Area of the MCBQ. The site, which is bounded by wooded land in all directions, consists of two distinct areas comprising approximately 5 acres. The site first appeared active in December, 1953. At this time, the site contained an area of open burning with visible smoke. One trench at the end of the access road and two trenches south of the road were also visible. By June, 1962, the site appeared to have been revegetated. The EPIC identified the area as a possible waste disposal area (EPA, 1994).

The site consists of several small cleared areas with stands of young pine trees, several small training trenches, old building foundations, and collapsed bunker. Dead or discolored vegetation was not observed during the SSP site visits. Several corroded drums were found on the ground surface; this debris was removed from the site during the SSP investigation.

The site was closed out under the Engineering Evaluation/Cost Analysis (EE/CA) phase of the IRP. An SSP investigation was conducted at the site during FY1998. The results of the investigation were presented to EPA Technical Support at a May 20, 2000 meeting and to the QPMT at a June 5, 2002 meeting; the QPMT agreed that an EE/CA would be prepared for the site. The results of the EE/CA were presented to EPA Technical Support and QPMT at an August 19, 2003 meeting. A final EE/CA presentation was submitted to the QPMT on January 30, 2004. At a December 10, 2003 meeting, the QPMT agreed that no action was appropriate, but that housekeeping

activities might be conducted at some time in the future. In 2006, housekeeping activities (Shaw, 2007a) were completed at Site 21 while removal action activities were conducted at Site 8. Brief decision documents (Closeout Documents No. 31 and 40) were signed by the QPMT on February 4, 2004 and October 17, 2007. A multiple-site ROD (NAVFAC, 2008), describing the need for no further action (NFA) following removal action activities at Sites 8, 9, 10, 21, 32, 33, 34, and 98, was signed by MCBQ in August 2008 and by EPA in September 2008.

A.1.12 APS-08—FBI Academy Cleared Area

APS-08 is located in the central portion of the MCB east of MCB Route 4 and within Training Area 8-B. This site first appeared as a graded area in August 1969. By November 1970, the site had expanded and included several mounds of material and a trench along its southern border. Maximum size was attained by December 1971 and the site was barren and graded. There was no activity at the site after March 1981 and it was partially revegetated. By January 1993, the site was active again and marked by the appearance of a low berm constructed along the western boundary and many mounds of light-toned and dark-toned debris. The EPIC identified the area as a possible waste disposal area (EPA, 1994).

During the DTA and DTAWS site visits, the site appeared to be used for the disposal of excess soil fill from Base construction projects. No visible evidence of hazardous waste contamination was observed at the site.

The site was closed out under the DTAWS phase of the IRP. A DTA investigation was completed for the site in FY2002. The results of the DTA were presented at the June 5, 2002 QPMT meeting, where the QPMT agreed that to proceed to a DTAWS investigation. The sampling design for the DTAWS investigation was presented in the FY2002 DTAWS Work Plan (Tetra Tech, 2002). The results of the DTAWS investigation were presented at a March 5, 2003 QPMT meeting, where the QPMT agreed that no action was appropriate. A brief decision document (MCBQ IRP Closeout Document No. 27) was signed by the QPMT on April 23, 2003.

A.1.13 APS-09—LZ Ostrich Cleared Area

APS-09 is located in the central portion of the MCBQ within the area adjacent to MCB Route 1 within Training Area 8-B. Based on a December 1953 aerial photograph, the site appeared as a cleared area. Three pits with dark stains were evident on the June 1962 and March 1963 aerial photography. Vehicle tracks and ground scars were also visible. By March 1981 the site was mostly revegetated. The EPIC identified the area as a possible waste disposal area (EPA, 1994).

During the 1994 field inventory and the DTA site visit, the site consisted of a previously cleared area with stands of young pine trees and old building foundations. In addition, a small rubble pile with one corroded drum lying on its side was present in a small swale area.

The site was closed out under the DTA phase of the IRP. A DTA investigation was completed for the site in FY2002. The results of the DTA investigation were presented to the QPMT at the July 18, 2002 meeting, where the QPMT agreed that no action was appropriate. A brief decision document (MCBQ IRP Closeout Document No. 24) was signed by the QPMT on September 5, 2002.

A.1.14 APS-10—Guadalcanal Maintenance Disposal Area (Site 24)

APS-10 is located in the central portion of the MCBQ within the Construction Equipment Repair (CER) area adjacent to MCB Route 1 within Training Area 8-B. The EPIC identified the area as a possible waste disposal area (EPA, 1994). This site was first noticed in June 1962 aerial photographs as several roads leading to two areas of dark staining. Ground scars were also present, but were revegetated by March 1963. Numerous vehicle tracks appeared in November 1970 and December 1971 aerial photographs and the dark staining was also evident. The southern half of the site was revegetated by March 1981. The northern half of the site was barren and the dark staining was gone. By January 1993 the site activity changed to an open storage area containing discarded objects, mounded materials, and debris.

During the DTAWS site visits, the site was actively used as the Guadalcanal maintenance storage area.

The site was closed out under the DTAWS phase of the IRP. A DTAWS investigation was conducted at the site during FY1998. The results of the DTAWS investigation were presented in DTAWS Report No. 1 (Tetra Tech, 2000f). At a July 10, 2002 meeting, the QPMT agreed that no action was appropriate. A brief decision document (MCBQ IRP Closeout Document No. 3) was signed by the QPMT on August 30, 2001.

A.1.15 APS-11—TBS Northwest Training Area (Site 33)

Site 33 is located within the Camp Barrett Area of the MCBQ west of MCB Route 3. The site encompasses approximately 25 acres and is rectangular in shape. The unit appeared to be active in February 1954 aerial photographs. Between 1954 and 1962, the site contained many large pits (resembling craters), light-toned objects, linear plow scars, and a fill area. The pits and fill area were graded by June 1962, and light-toned materials and a long trench were observed in the aerial photographs. The trench was gone by August 1969, but the light-toned materials were still evident. By March 1981 the site was completely vegetated. The EPIC identified the area as a possible waste disposal area (EPA, 1994).

During SSP site visits, several piles of exposed and buried drums, as well as construction rubble and old asphalt mounds, were observed at the site. Most of the drums appeared to be empty asphalt sealer drums, suspected to be used during road construction activities. Surface debris was removed from the site during the SSP investigation. The eastern portion of the site was a relatively level field used for training exercises, while the western portion of the site was wooded. Dead or discolored vegetation was not observed at the site.

The site was closed out under the EE/CA phase of the IRP. An SSP investigation was conducted at the site during FY1998. The results of the investigation were presented to EPA Technical Support at a May 20, 2000 meeting and to the QPMT at a June 5, 2002 meeting. The QPMT agreed that the site would proceed to a supplemental SSP investigation to address perceived data gaps. A supplemental SSP investigation was conducted at the site during FY2002. The results of the supplemental SSP investigation were presented to the QPMT at a June 26, 2003 meeting, where the QPMT agreed to proceed to an EE/CA. The final EE/CA report (Tetra Tech, 2005a) was submitted to the QPMT on April 4, 2005, and the associated Action Memorandum (NAVFAC, 2005a) was signed on May 25, 2005. A removal action was completed at the site in 2005/2006. A brief decision document (MCBQ IRP Closeout Document No. 39), which is included in the Contractor Closeout Report for Site Remediation (Shaw, 2007b), was signed by the QPMT on June 25, 2007. A multiple-site ROD (NAVFAC, 2008), describing the need for NFA following removal action activities at Sites 8, 9, 10, 21, 32, 33, 34, and 98, was signed by MCBQ in August 2008 and by EPA in September 2008.

A.1.16 APS-12—TBS Southern Cleared Area

APS-12 is located in the south-central portion of the MCBQ within the Camp Barrett area along MCB Route 3 within Training Area 7-B. The EPIC identified the area as a possible waste disposal area (EPA, 1994). Based on a February 1954 aerial photograph, the site consisted of a cleared area. Light-toned staining or frozen liquid at the end of the road was observed. The site was covered with vegetation by July 1962, and no further activity was noted through 1993.

Based the DTA site visit, there was no visible evidence of past hazardous waste disposal activities at the site.

The site was closed out under the DTA phase of the IRP. A DTA investigation was completed for the site in FY2002. The results of the DTA were presented at the July 18, 2002 QPMT meeting, where the QPMT agreed that no action was appropriate. A brief decision document (MCBQ IRP Closeout Document No. 24) was signed by the QPMT on September 5, 2002.

A.1.17 APS-13—TA-9B Northern Cleared Area

APS-13 is located along the western boundary of the MCBQ adjacent to State Route 610 within Training Area 9-B. The EPIC identified the area as a possible waste disposal area (EPA, 1994). Based on a March 1954 aerial photograph, the site consisted of three cleared areas with light-toned staining in two of the three areas. By June 1962 the three areas were revegetated.

During the DTA site visit, there was no visible evidence of past waste disposal activities at the site.

The site was closed out under the DTA phase of the IRP. A DTA investigation was completed for the site in FY2002. The results of the DTA were presented at the July 18, 2002 QPMT meeting, where the QPMT agreed that no action was appropriate. A brief decision document (MCBQ IRP Closeout Document No. 24) was signed by the QPMT on September 5, 2002.

A.1.18 APS-14—Range 8 Cleared Area (Site 25)

Site 25 is located along the western boundary of the MCBQ approximately 1 mile north and east of State Routes 610 and 612, respectively. The EPIC identified the area as a possible waste disposal area (EPA, 1994). Based on a review of aerial photography, the site was active from June 1962 to August 1969. By 1971, the site was completely revegetated and remained so until at least 1993. The site is comprised of five distinct areas, arbitrarily labeled A through E for reporting purposes.

Area A is located approximately 386 feet from the building centrally located within the range's parking area and consists of a linear base area approximately 50 to 75 feet long. This area was previously identified in historical aerial photographs as a ground scar. Area B is a cleared area southwest of Area A, which was previously identified as an area of disturbed ground. Area C consists of a topographic jut and was previously identified as an area containing trenches and pits containing unknown liquids. Area D is located near the range, where a ground scar was noted in historical photographs. Metal debris and sculptured pits comprise Area E, which is located between areas C and D. Area E was previously identified as an area of light-toned material and disturbed ground.

During a site visit conducted for the DTAWS investigation, most of the areas were noted to be overgrown with vegetation. Some minor visible evidence of what appeared to be trenches and pits were found at Areas A, D, and E. However, no surface debris was present.

The site was closed out under the DTAWS phase of the IRP. A DTAWS investigation was conducted at the site during FY1998. The results of the DTAWS investigation were presented in DTAWS Report No. 1 (Tetra Tech, 2000f); the QPMT agreed that no action was appropriate. This report and the signed signature page for the report serves as the brief decision document for the site.

A.1.19 APS-17—Route 608 Cleared Area

APS-17 is located in the northern portion of the MCBQ north of MCB Route 8 in Training Area 17-B. The site, which appeared active only in the December 1992 aerial photography, was a cleared area containing several groupings of light-toned objects. The EPIC identified the area as a possible waste disposal area (EPA, 1994).

During the DTA site visit, the site appeared to be large area cleared by the MCBQ Forestry Department. Small piles of construction rubble were observed. However, there was no visible evidence that hazardous waste disposal activities occurred at the site.

The site was closed out under the DTA phase of the IRP. A DTA was completed for the site in FY2002. The results of the DTA were presented at the July 18, 2002 QPMT meeting, where the QPMT agreed that no action was warranted. A brief decision document (MCBQ IRP Closeout Document No. 24) was signed by the QPMT on September 5, 2002.

A.1.20 APS-18—Shooting Range Disposal Area

APS-18 is located in the central portion of the MCBQ within Training Area 11-B. The EPIC identified the area as a possible waste disposal area (EPA, 1994). Based on a review of a December 1992 aerial photograph, numerous mounds of light-toned and dark-toned mounded materials were observed to be present.

During the DTA site visit, the site consisted of mounds of rubble, construction debris, and asphalt pavement. There was no visible indication that hazardous waste activities occurred at the site.

The site was closed out under the DTA phase of the IRP. A DTA investigation was completed for the site in FY2002. The results of the DTA were presented at the June 5, 2002 QPMT meeting, where the QPMT tentatively agreed to defer the site to the RCRA program. The Virginia Northern Regional Office subsequently conducted a visit of the site and decided that the QPMT should address the site under the IRP instead of the RCRA Program. During an October 17, 2002 meeting, the QPMT reviewed the site history and agreed that no action under the IRP was appropriate. A brief decision document (MCBQ IRP Closeout Document No. 25) was signed by the QPMT on December 18, 2002.

A.1.21 APS-19—Camp Goettge Northwest Cleared Area

APS-19 is located along the western boundary of the MCBQ to the east of State Route 610 and west of Goettge Road within Training Area 14. The site is north of L-26 (Camp Goettge South Disposal Area) and TP-47 (Camp Goettge Sewage Treatment Plant [STP]). The site appeared as a cleared area with ground scars in June 1962, was partially revegetated in June 1969, and was fully revegetated by December 1971. The EPIC identified the area as a possible waste disposal area (EPA, 1994).

Metal debris and drums were observed at the site during a DTA site visit. The area is reforested with young pine trees. There was no visible indication that hazardous waste activities occurred at the site.

The site was closed out under the DTA phase of the IRP. A DTA investigation was conducted at the site during FY1998. The results of the DTA investigation were presented in DTA Report No. 2 (Tetra Tech, 1998c); the QPMT agreed that no action was appropriate. This report and the signed signature page for the report serves as the brief decision document for the site.

A.1.22 APS-20—Camp Goettge South Disposal Area

This site is also referred to as SWMU L-26. A description of the site is provided under the land-based (L) units, Section A.7.25.

A.1.23 APS-21—LZ Woodpecker Disposal Area (Site 51)

Site 51 is located within the northeast portion of the MCBQ south of MCB Route 1 within Training Area 11-A. The EPIC identified the area as a possible waste disposal area (EPA, 1994). The site appeared active only in the December 1971 aerial photographs. It consisted of a large mound of light-toned material adjacent to a building. A smoke plume appeared to be emanating from a burn pit in the December aerial photograph. The site was abandoned (with all materials and structures removed) by April 1981.

During a DTAWS site visit, the site was reforested with stands of young pine trees. In addition, small rubble piles were evident at the site.

The site was closed out under the DTAWS phase of the IRP. A DTAWS investigation was conducted at the site during FY2001. The results of the DTAWS investigation were presented to the QPMT at a March 7, 2002 meeting, where the QPMT agreed that no action was appropriate. A brief decision document (MCBQ IRP Closeout Document No. 9) was signed by the QPMT on April 9, 2002.

A.2 RCRA AOC SITES

This section presents brief site descriptions of the Area of Concerns (AOCs), as presented in the Phase II Resource Conservation and Recovery Act Facility Assessment (RFA) (A. T. Kearney, 1989b).

A.2.1 AOC-A—Storage Tanks (127 tanks)

This AOC includes 127 underground storage tanks (USTs) that are either currently or were previously located at the MCBQ. These UST sites are regulated under "Subtitle I - Regulation of Underground Storage Tanks" of the Hazardous and Solid Waste Amendments of 1984. All AOC-A storage tanks have either been removed, closed in place, or are scheduled for removal during the Phase III UST Removal Contract.

This site was deferred to another regulatory program as a result of the Findings of Fact in the FFA (EPA, 1998). Thus, no action under the IRP is required.

A.2.2 AOC-B—Building 3252 Stressed Area (Site 55)

Site 55 is located within the Mainside of the MCBQ along Range Road. Reportedly, this area consisted of approximately 120 square feet of stressed vegetation (yellow and white stains on grass) located just north of the Building 3252 Temporary Waste Storage Area (SWMU CA-32). The site was located within the lot near Building 3252; in general, the lot was used for vehicle parking and as a storage space for supplies and small pieces of equipment for activities occurring in Building 3252. The stressed vegetation was likely related to past storage activities associated with SWMU CA-32.

During a DTAWS site visit, no signs of stressed vegetation were observed at the site. A portion of the former stained area was suspected to have been developed and incorporated into the access point of the parking lot.

The site was closed out under the DTAWS phase of the IRP. A DTAWS investigation was conducted at the site during FY2000. The results of the DTAWS investigation were presented to the QPMT at a May 31, 2001 meeting, where the QPMT agreed that no action was appropriate. A brief decision document (MCBQ IRP Closeout Document No. 3) was signed by the QPMT on August 30, 2001.

A.2.3 AOC-C—Building 4 East Apron

AOC-C is located within the Mainside of the MCBQ along the eastern boundary. This area consists of a concrete and asphalt apron positioned approximately 15 feet west of the Potomac River near the Auto Hobby Shop (Building 4). The asphalt apron reportedly contained several oil stains.

During the DTA site visit, it was noted that the asphalt apron had been repaved.

The site was closed out under the SSP phase of the IRP. A DTA investigation was completed during FY1999. The results of the DTA investigation were presented in DTA Report No. 6 (Tetra Tech, 2000b). In the DTA Report, decisions regarding the site were deferred until the results of FY2000 DTAWS investigations for other Building 4 sites were available. Upon completion of the DTAWS field effort, the QPMT decided to proceed to an SSP investigation at all Building 4 sites, including AOC-C. An SSP investigation was completed during FY2002. The results of the SSP investigation were presented to EPA Technical Support and QPMT at a July 9, 2002 meeting, where the QPMT agreed that no action was appropriate. A brief decision document (MCBQ IRP Closeout Document No. 22) was signed by the QPMT on July 9, 2002.

A.2.4 AOC-D—Building 2113 Fuel Oil Tank Storage Area

AOC-D is located near Bauer Road within the Mainside of the MCBQ along the Potomac River. The former 275-gallon above ground storage tank was used to store fuel (No. 2 fuel oil) for an emergency generator located in the interior of Building 2113 and was built in 1941. The tank was located on the west side of Building 2113 and east of Building 69, but has since been removed. During the RFA Visual Site Inspection (VSI), a 1-square foot stained area devoid of vegetation was observed adjacent to the tank.

During the DTA and SSP site visit, there was no visible indication of contamination at the site.

The site was closed out under the SSP phase of the IRP. A DTA investigation was completed for the site during FY1999. The results of the DTA investigation were presented in DTA Report No. 7 (Tetra Tech, 2000a). The QPMT agreed to proceed with a DTAWS investigation. However, because an SSP investigation was planned for other IRP sites located in the vicinity of AOC-D, an SSP investigation was conducted at AOC-D during FY2001. The results of the SSP investigation were presented to EPA Technical Support and QPMT at a July 9, 2002 meeting, where the QPMT agreed that no action was appropriate. A brief decision document (MCBQ IRP Closeout Document No. 22) was signed by the QPMT on July 9, 2002.

A.2.5 AOC-E—Building 27002 Product Drum Storage Area

AOC-E is located within the CER area of the MCBQ south of MCB Route 1 within Training Area 8-B. The site was located in a graveled area located approximately 40 yards west of Building 27002 near a container accumulation area (CA-1). During the RFA VSI, a 15-square foot stain containing two product drums, placed horizontally over a metal rack approximately 2 feet above the ground surface, was present. The drums contained chainsaw fuel and lube oil and were found to be leaking.

During the DTA and DTAWS site visits, the site was no longer present and had been replaced by a new hazardous materials storage locker.

The site was deferred to another regulatory program during the DTAWS phase of the IRP. A DTA was completed for the site in FY1999. The results of the investigation were presented in DTA Report No. 7 (Tetra Tech, 2000a). The QPMT agreed to proceed with a DTAWS investigation because a release of hazardous constituents may have occurred at the site. A DTAWS was conducted during FY2002. The results of the DTAWS investigation were presented at an April 9, 2002 meeting, where the QPMT agreed that the site should be deferred to the RCRA Program. Thus, no action under the IRP is required. A brief decision document (MCBQ IRP Deferral Document No. 4) was signed by the QPMT on May 16, 2002.

A.2.6 AOC-F—Building 27054 Stained Area (Site 56)

Site 56 is located within the CER area of the MCBQ south of MCB Route 1 within Training Area 8-B. The site was a stained area located approximately 10 feet east of Building 27054's eastern exterior wall near the building's southeastern corner. Building 27054 is a maintenance and repair facility for heavy construction equipment. During the RFA VSI, a 65-square foot stained (assumed to be a result of an oil spill) was observed at the site. No odors were detected from the stain.

During a DTAWS site visit, the stained area was not observed. The stain may have been removed from the site or buried beneath new layers of gravel that have been added to the area.

The site was closed out under the DTAWS phase of the IRP. A DTAWS investigation was conducted at the site during FY2000. The results of the DTAWS investigation were presented at the July 10, 2001 meeting, where the QPMT agreed that a supplemental DTAWS investigation was appropriate. A supplemental DTAWS investigation was completed during FY2001. The results of the supplemental DTAWS were presented during the December 11, 2001 QPMT meeting, where the QPMT agreed that no action was appropriate. A brief decision document (MCBQ IRP Closeout Document No. 8) was signed by the QPMT on January 16, 2002.

A.2.7 AOC-G—Building 27054 Lube Oil Storage Area (Site 57)

Site 57 is located within the CER area of the MCBQ south of MCB Route 1 within Training Area 8-B. This unit was located northeast of Building 27054 along a fence. The area consisted of 55-gallon drums of lube oil stored on wooden pallets over a gravel surface. A heavily stained area approximately 20 square feet in size was observed during the RFA VSI.

During the DTAWS site visit, no drums were present at the site. The previously noted stained area was also not observed. The stained soil may have been removed from the site or buried beneath new layers of gravel that have been added to the area.

The site was closed out under the DTAWS phase of the IRP. A DTAWS investigation was conducted at the site during FY2000. The results of the DTAWS investigation were presented at the July 10, 2001 meeting, where the QPMT agreed that a supplemental DTAWS investigation was appropriate. A supplemental DTAWS investigation was completed during FY2001. The results of the supplemental DTAWS were presented to the QPMT at a December 11, 2001 meeting, where the QPMT agreed that no action was appropriate. A brief decision document (MCBQ IRP Closeout Document No. 8) was signed by the QPMT on January 16, 2002.

A.2.8 AOC-H—Building 2208 Stained Area (Site 58)

AOC-H is located within the Mainside along the eastern boundary of the MCBQ just south of Quantico Creek and west of the Potomac River. The site is located approximately 50 yards northwest of Building 2208 near the old laundromat. The site covers approximately 60 square feet and reportedly contained stained soils from a previous spill. During the RFA VSI, the stained soils had an oily texture and an oily odor. Additionally, there was a patch of soil containing an unidentified white powdery substance adjacent to and southeast of the site. At the time of the RFA VSI, Building 2208 had been out of service for three to four years, but several small areas of stressed vegetation were observed.

The site was closed out under the DTAWS phase of the IRP. A DTAWS investigation was completed for the site during FY2001. The results of the DTAWS investigation were presented in DTAWS Report No. 2 (Tetra Tech, 2000g). The QPMT originally agreed that the site would proceed to an SSP investigation. However, a site visit was conducted with the QPMT on April 12, 2001, and the QPMT agreed that no action was appropriate. A brief decision document (MCBQ IRP Closeout Document No. 1) was signed by the QPMT on May 30, 2001.

A.2.9 AOC-I—Building 3066 Diesel Fuel Tank Stained Area

AOC-I is located within the Mainside of the MCBQ adjacent to the golf course approximately 700 feet from the northeastern Base boundary. This area consisted of a 250- to 300-gallon above ground diesel fuel tank located approximately 100 yards east of Building 3066 at the golf course maintenance area. The tank was located on bare ground surface. During the RFA VSI, fuel stains were evident on the ground surface near the sides of the tank and up to approximately 20 feet away from the tank.

This site was deferred to another regulatory program as a result of the Findings of Fact in the FFA (EPA, 1998). Thus, no action under the IRP is required.

A.2.10 AOC-J—Building 3254 Stained Area (Site 48)

Site 48 is located within the Mainside of the MCBQ along Range Road. This area is located adjacent and north of Building 3254 (B-05) and east of the Building 3252 refueling area. The area consisted of two heavily stained gravel areas (approximately 20 and 60 square feet) located next to each other. Oil and fuel odors were noted during the RFA VSI.

During the DTAWS site visit, the site was used for vehicle parking, vehicle refueling, and miscellaneous storage of equipment and material. No stained areas were observed at the site.

The site was closed out under the DTAWS phase of the IRP. A DTAWS investigation was completed for the site during FY2000. The results of the DTAWS investigation were presented at a May 31, 2001 meeting, where the QPMT agreed to proceed with a supplemental DTAWS investigation. The supplemental DTAWS investigation was conducted in FY2001. The results of the DTAWS were presented at a December 11, 2001 meeting, where the QPMT agreed that no action was appropriate. A brief decision document (MCBQ IRP Closeout Document No. 8) was signed by the QPMT on January 16, 2002.

A.2.11 AOC-K – Septic Tanks (15 tanks)

There are approximately 15 underground septic tanks located throughout the MCBQ. It is not certain whether sanitary wastes only were managed in these tanks. The exact location, capacities, age, operational status, and materials of construction of the underground tanks are also unknown. During the RFA VSI, only two tank locations were noted; one southeast of Building 27263 and another east of Building 2427 Burn Area (L-17).

The site was closed out under the DTA phase of the IRP. A DTA was conducted for the site during FY2002. The results of the DTA were presented to the QPMT at a July 18, 2002 meeting, where the QPMT agreed that no action was appropriate. A brief decision document (MCBQ IRP Closeout Document No. 24) was signed by the QPMT on September 5, 2002.

A.3 Waste Storage Buildings

This section presents brief site descriptions of the waste storage buildings, as presented in the Phase II RFA (A.T. Kearney, 1989b).

A.3.1 B-01—Hazardous Waste Storage Building 2141

This building (bunker) is located on an unnamed access road near Route 636 within Training Area 2 in the southeastern portion of the MCBQ. The building is semi-cylindrical in shape and is 25 feet wide, 20 feet deep, and 12 feet high at the center. The facility is constructed of reinforced concrete, waterproofed, and covered with earthen fill. It has epoxy-coated floors and concrete grading with a 6-inch curb at the entrance. The site was permitted to manage 10 drums only at one time. During the RFA VSI, mineral spirits, toluene, and perchloroethylene were stored at the site. Nickel/cadmium, lithium, mercury, and lead-acid batteries were placed on pallets, and waste paints and paint-related materials were stored in containers of various sizes. Moisture was noted underneath some of the drums that were double-stacked at the seam of the facility.

The facility is no longer used for the hazardous waste storage. During the 1994 field inventory, there were no drums stored at the facility, and there was no visible indication of contamination at the site. All temporary storage of hazardous waste is conducted at the permitted Building 27401 (B-02).

This site was deferred to another regulatory program as a result of the Findings of Fact in the FFA (EPA, 1998). Thus, no action under the IRP is required.

A.3.2 B-02—Building 27401

This building is located approximately 100 yards northwest of the intersection between MCB Route 1 and MCB Route 2 within Training Area 6-B in the central portion of MCBQ. The building, which was constructed in 1987, is a 3,000 square foot pre-engineered metal structure with a 12-foot wide by 12-foot high overhead metal door. The concrete floor is epoxy-coated, drain-free, and contains water-tight joints. The center storage area was reportedly used for the storage of polychlorinated biphenyl (PCB)-containing items.

During the 1994 field inventory, the building was being used for temporary storage of hazardous waste, as permitted. Waste is subsequently disposed at the Quantico Sanitary Landfill.

This site was deferred to another regulatory program as a result of the Findings of Fact in the FFA (EPA, 1998). Thus, no action under the IRP is required.

A.3.3 B-03—Building 2191 (Site 59)

This building (bunker) is located 300 feet west of Building 2141 (B-01) on an unnamed access road off of Route 636 within Training Area 2 in the southeastern portion of the MCBQ. The building is constructed of reinforced concrete; the exterior is waterproofed and the outside is covered with earthen fill. It was used as an overflow drum storage area from the permitted storage facility (Building 27401, B-02) and first received hazardous waste in 1979. Mine casings and empty drums containing residuals of hydraulic fluids and oils were stored on a concrete surface.

The facility was certified clean closed on August 12, 1987 and stores only nonhazardous waste. During the 1994 field inventory, there were no drums stored at the facility, and there was no visible indication of contamination at the site. All temporary storage of hazardous waste occurs at the permitted storage facility (B-02).

The site was closed out under the DTAWS phase of the IRP. A DTAWS investigation was conducted during FY2002. The results of the DTAWS investigation were presented at a March 7, 2002 meeting, where the QPMT agreed that no action was appropriate. A brief decision document (MCBQ IRP Closeout Document No. 11) was signed by the QPMT on April 9, 2002.

A.3.4 B-04—Building 2142

This building (bunker) is located approximately 300 feet east of Building 2141 within Training Area 2 in the southeastern portion of the MCBQ. The building is constructed of reinforced concrete; the exterior is waterproofed and the outside is covered with earthen fill. Hazardous materials awaiting disposal were stored at the unit beginning in 1979. Strontium-90 and other radiological materials (all sealed sources) were present during a 1984 IAS site visit. Private contractors later disposed of these materials off-Base in an appropriate manner.

During the DTAWS site visit, there were no drums stored at the facility, and there was no visible indication of contamination at the site. All temporary storage of hazardous waste is at the permitted storage facility (Building 27401, B-02).

The site was closed out under the DTA phase of the IRP. A DTAWS investigation was conducted during FY2002. The results of the DTA investigation were presented at a March 7, 2002 meeting, where the QPMT agreed that no action was appropriate. A brief decision document (MCBQ IRP Closeout Document No. 10) was signed by the QPMT on April 9, 2002.

A.3.5 B-05—Building 3254

This building is located approximately 75 feet southeast of Building 3252 between Building 3252 and Range Road within the Mainside of the MCBQ. The building is a 15-foot long, 12-foot wide, 10-foot high concrete building, constructed of cinderblock on a concrete slab. The unit temporarily housed 55-gallon drums and 5-gallon cans containing the following wastes: lube and engine oil (275 gallons per year [gpy]), hydraulic fluid (135 gpy), transmission fluid (15 gpy), ethylene glycol (40 gpy), waste gasoline (6 gpy), and PD-680 (20 gpy). Surface soil stains were observed during the RFA VSI.

The building is used to store product fluids for the operations occurring within Building 3252 (Base Maintenance Building). During the DTAWS site visit, product fluids (grease, antifreeze, motor oil, lubricant, compressor oil, epoxy coatings, and metal working coolant) were stored in 55-gallon drums, 1-gallon cans, and smaller containers. A two-tier containment system, consisting of absorbent material and sandbags, was present. No surface soil stains were observed.

The site was closed out under the DTAWS phase of the IRP. A DTAWS investigation was completed for the site during FY2000. The results of the DTAWS investigation were presented at a May 31, 2001 meeting, where the QPMT agreed to proceed to a supplemental DTAWS investigation. The supplemental DTAWS investigation was completed in FY2001. The results of the supplemental DTAWS investigation were presented to the QPMT at a December 11, 2001 meeting, where the QPMT agreed that no action was appropriate. A brief decision document (MCBQ IRP Closeout Document No. 8) was signed by the QPMT on January 16, 2002.

A.3.6 B-06—Building 2091

Building 6 is located within the Mainside of the MCBQ along Barnett Avenue. This 20-foot long, 8-foot wide, and 8-foot high building is located east of Building 2013 and is flanked by battery and container accumulation areas (CA-35 and BA-10). The start-up date for this unit is unknown. During the RFA VSI, the unit contained six closed-top 55-gallon drums on pallets; four drums contained motor oil, one drum contained diesel oil, and the sixth drum was empty. One of the motor oil drums had absorbent material placed underneath it to contain a recent spill.

Building 6 is no longer present and has been replaced by Building 2097, a new hazardous materials storage locker.

The site was closed out under the DTA phase of the IRP. A DTA investigation was conducted at the site during FY2001. The results of the DTA investigation were presented at an October 3, 2001 meeting, where the QPMT agreed that no action was appropriate. A brief decision document (MCBQ IRP Closeout Document No. 6) was signed by the QPMT on November 8, 2001.

A.3.7 B-07—Building 3218

Building 7 is located within the Mainside of the MCBQ within Training Area 3. This 50-foot long, 20-yard wide, 10-yard high building (bunker) is located southwest of the Old Batch Plant (L-4) and south of the intersection of Route 636 and Elrod Road. This building was formerly used as salt storage bunker that began housing off-line PCB-containing transformers on June 10, 1988. During the RFA VSI, three off-line PCB-containing transformers were stored here on a plastic sheet covering a cement floor. One of the transformers was observed to be leaking; absorbent material was being used to contain the spill. There were stains on the plastic sheet and floor in the vicinity of the other two transformers. The bottoms of two transformers appeared to be corroded.

The site was closed out under the RI/FS phase of the IRP. As identified in MCBQ IRP Consensus Agreement No. 6, the investigation of this site was completed concurrently with the investigation of L-04 (Site 5, Old Batch Plant), M-06, M-07, and M-08. The results of the RI were presented in the RI Report (Tetra Tech, 1998d). An interim soil removal action was performed at the sites during the RI stage, and an NFA ROD (NAVFAC, 2000a) was signed. The ROD indicated that confirmation sampling would be conducted to ensure that the previous removal action was adequate. The first round of confirmation sampling was completed in FY2001, and the associated results were presented at a March 7, 2002 meeting. During a March 27, 2002 conference all, the QPMT agreed that an additional round of monitoring was necessary. The second round of confirmation sampling was completed in August 2002, and the associated results were presented at the January 22, 2003 meeting. At a March 6, 2003 meeting, the QPMT decided to proceed to an EE/CA because it was assumed that residual sediment in the catch basins and drop inlets was contributing to contamination in a nearby drainage ditch, which eventually discharges to the Potomac River. The final EE/CA Report (Tetra Tech, 2004b) was submitted to the QPMT on April 15, 2004. The Action Memorandum (EFACHES, 2004b) for the additional removal action was signed by the Navy on May 17, 2004. Another removal action and stream restoration (Shaw, 2005a) was completed from April to August 2005 to mitigate residual sediment contamination in the catch basins and drop inlets. A second NFA ROD (NAVFAC, 2007a) was signed in July 2007.

A.3.8 B-09—Building 3037

This building is located west of the Richmond, Fredericksburg, and Potomac (RF&P) Railroad lines off Zeilin Road within the Mainside of the MCBQ. No startup date is available. One transformer, containing 25 gallons of almost pure PCB-type dielectric fluid, was temporarily stored in the concrete building until 1979.

The site was closed out under the DTA phase of the IRP. A DTA investigation was conducted at the site during FY2001. The results of the DTA investigation were presented at an October 3, 2001 meeting, where the QPMT agreed that no action was appropriate. A brief decision document (MCBQ IRP Closeout Document No. 6) was signed by the QPMT on November 8, 2001.

A.3.9 B-10—Pesticide Control Building (Site 32)

This building is the former location of Building 689, which was used for the storage of large quantities of various pesticides and herbicides. The former pesticide control building was located on a hill near the Base's wastewater treatment plant and adjacent to Epperson Avenue and L-02 (Site 4, Old Landfill) in the Mainside of the MCBQ. Building 689 housed pesticides and herbicides until January 1985, when a fire destroyed the entire building. At the time of the fire, it is estimated that approximately 500 pounds of pesticides and herbicides (including 2, 4-D, chlordane, diazinon, dursban, malathion, and others) were stored at the site.

The site was closed out under the EE/CA phase of the IRP. A DTAWS investigation was conducted in FY1998. The QPMT agreed to proceed with an SSP investigation even though a DTAWS report was not yet prepared. An SSP investigation was completed in FY1999. The results of the DTAWS and SSP investigations were presented in SSP Report No. 2 (Tetra Tech, 2001a). The QPMT agreed to proceed to a supplemental SSP investigation. The results of the supplemental SSP were presented to the QPMT at a June 26, 2003 meeting, where the QPMT agreed to proceed to an EE/CA. The final EE/CA Report (Tetra Tech, 2005b) was submitted to the QPMT, and the associated Action Memorandum (NAVFAC, 2005d) was signed on May 25, 2005. A removal action (Shaw, 2007c) was

completed at the site in 2005. Portions of the site (drainage channel near the wastewater treatment plant and areas along the banks of the Quantico Embayment south of Epperson Avenue) were incorporated into the Site 99 (Quantico Embayment) remedial action, as described in a brief decision document (MCBQ IRP Closeout Document No. 38) that was signed by the QPMT on June 25, 2007. A multiple-site ROD (NAVFAC, 2008), describing the need for NFA following removal action activities at Sites 8, 9, 10, 21, 32, 33, 34, and 98, was signed by MCBQ in August 2008 and by EPA in September 2008.

A.4 Battery Accumulation Areas L-02

This section presents brief site descriptions of the battery accumulation areas, as presented in the Phase II RFA (A. T. Kearney, 1989b).

A.4.1 BA-01—Building 27054 Battery Work Area

BA-01 was located off MCB Route 4 near the eastern exterior wall of Building 27054 in the CER area within Training Area 8-B. No startup date is available. The site consisted of three separate areas used to stockpile wet, lead acid batteries. The northern accumulation area consisted solely of used batteries stockpiled for the purpose of recycling. During the RFA VSI, these batteries had been placed on pallets over the gravel lot with several of the batteries in direct contact with the gravel lot. The center accumulation area was used for draining battery fluids and consisted of a closed-top 55-gallon drum, containing caustic soda and water, which was situated on a concrete pad. The recycling process required each battery to be opened and the battery fluids were drained into the drum to be neutralized. The empty battery casings were stored in the southern accumulation area until they were removed offsite by a licensed waste removal contractor. As observed during the RFA VSI, the batteries on the pallets were turned upside down allowing battery fluids to drip onto the gravel lot. However, no stains were observed.

Battery draining and neutralization operations are no longer conducted at Building 27054. BA-01 is no longer used for the storage of batteries.

The site was closed out under the DTAWS phase of the IRP. A DTAWS investigation was conducted at the site during FY2000. The results of the DTAWS investigation were presented to the QPMT at a July 10, 2001 meeting, where the QPMT agreed that no action was appropriate. A brief decision document (MCBQ IRP Closeout Document No. 3) was signed by the QPMT on August 30, 2001.

A.4.2 BA-02—Building 2013 Battery Workshop/Area

Building 2013, which is the Motor Vehicle Maintenance Facility for approximately 800 vehicles, is located inside Building 2013 near the intersection of Barnett Avenue and Cole Street within the Mainside of the MCBQ. Wet lead-acid batteries along with waste battery fluids were managed at this unit. No startup date is available for operations. The Workshop, which was occasionally used for the temporary storage of used and/or drained batteries, was located near the center of and along the northwest wall of Building 2013. The Workshop was approximately 20 feet by 20 feet and contained one 55-gallon drum for the collection of battery acid. Currently, a storage locker containing acids and corrosives is present where the drum in the Workshop was previously located. Batteries were neutralized with caustic soda outside of the Workshop (but within the building) in a 25 feet by 5 feet area located along the southeast wall in the Work Area. Batteries to be neutralized, as well as caustic soda, were contained in metal pallets in this area. A 55-gallon drum was used to drain and neutralize batteries. Caustic soda was poured directly into the drum after the drum received the waste battery acids. The concrete floors in the Workshop and Work Area were discolored white during the RFA VSI. Water, which was probably a result of washdown operations at the unit, was also observed on the floor underneath and around the Work Area. Floor drains in the building lead to the storm sewer system (M-01), which eventually drains to the Potomac River. No exterior drainage outlet is present at the site.

Battery draining and neutralization operations are no longer conducted at Building 2013. B-02 is no longer used for the storage of batteries. Hazardous materials generated or used during Building 2013 operations are stored in a new hazardous materials storage locker (Building 2097), located northeast of the Building 2013. During the DTA and DTAWS site visits, no evidence of contamination (staining of concrete or washwater) was noted at the site and the concrete floor of the building was intact.

The site was closed out under the DTAWS phase of the IRP. A DTA investigation was conducted at the site during FY1998. The results of the investigation were provided in DTA Report No. 1 (Tetra Tech, 1998a). The QPMT agreed to proceed to a DTAWS investigation, which was completed during FY1999. The results of the DTAWS

investigation were presented at an April 10, 2001 meeting, where the QPMT agreed that no action was appropriate. A brief decision document (MCBQ IRP Closeout Document No. 2) was signed by the QPMT on July 10, 2001.

A.4.3 BA-03—Building 24009 Battery Workshop

This unit is located in the southeast corner of Building 24009, which is located near MCB Route 3 in the Camp Barrett area within Training Area 8-A. The site housed batteries on wooden surfaces at least 1 foot from the concrete floor. During the RFA VSI, extensive white-colored staining was observed on the concrete floor. The Workshop contained one 55-gallon drum, where wet lead-acid batteries were drained and neutralized. Caustic soda and water were used as neutralizing agents. No startup date is available.

Battery draining and neutralization operations are no longer conducted at Building 24009. BA-03 is no longer used for the storage of batteries.

The site was closed out under the DTA phase of the IRP. A DTA investigation was conducted at the site during FY1998. The results of the DTA investigation were presented at a January 17, 2001 meeting along with the results of the DTAWS investigations conducted at other Building 24009 sites located near BA-03. The QPMT agreed that no action was appropriate. A brief decision document (MCBQ IRP Closeout Document No. 5) was signed by the QPMT on October 3, 2001.

A.4.4 BA-04—Building 2112 Battery Workshop

This unit is located in the southwest part of Larson's Gym in Building 2112 within the Mainside of the MCBQ within Training Area 2. Batteries were stored on wooden surfaces at least one foot from the concrete floor. During the RFA VSI, extensive white-colored staining of the concrete floor was observed. The Workshop contained one 55-gallon drum, where wet lead-acid batteries were drained and neutralized. This unit contained a sink that drained to a 10-gallon metal unit containing acid-neutralizing units (caustic soda and water). The building floor drains are connected to M-01, the storm sewer system.

Battery draining and neutralization operations are no longer conducted at Building 2112. B-04 is no longer used for the storage of batteries.

The site was closed out under the DTA phase of the IRP. A DTA investigation was conducted in FY2002. The results of the DTA investigation were presented at a March 7, 2002 meeting, where the QPMT agreed that no action was appropriate. A brief decision document (MCBQ IRP Closeout Document No. 10) was signed by the QPMT on April 9, 2002.

A.4.5 BA-05—Building 3230 Battery Workshop

This unit is located in the southwest corner of Building 3230 within Training Area 2 of the Mainside of the MCBQ. Batteries were stored on wooden surfaces at least one-foot from the concrete floor. During the RFA VSI, extensive white-colored staining of the concrete floor was observed. The Workshop contained one 55-gallon drum, where wet lead-acid batteries were drained and neutralized. Caustic soda and water were used as neutralizing agents. The building floor drains are connected to M-01, the storm sewer system.

Battery draining operations are no longer conducted at Building 3230. B-05 is no longer used for the storage of batteries.

The site was closed out under the DTA phase of the IRP. A DTA investigation was conducted at the site during FY2001. The results of the DTA investigation were presented at an August 29, 2001 meeting, where the QPMT agreed that no action was appropriate. A brief decision document (MCBQ IRP Closeout Document No. 6) was signed by the QPMT on November 8, 2001.

A.4.6 BA-06—Building 24009 Battery Accumulation Area No. 1

BA-06 is located on the west side of Building 24009 within Training Area 5-A adjacent to MCB Route 3 in the Camp Barrett area of the MCBQ. The site temporarily stored empty, drained, lead-acid batteries from Building 24009. The drained batteries were placed on pallets over a concrete surface.

Battery draining and neutralization operations are no longer conducted at Building 24009. BA-06 is no longer used for the temporary storage of batteries.

The site was closed out under the DTA phase of the IRP. A DTA investigation was completed for the site during FY1998. The results of the DTA investigation were presented at a January 17, 2001 QPMT meeting, along with the results of the DTAWS investigations conducted at other Building 24009 located near BA-06. At the meeting, the QPMT agreed that no action was appropriate. A brief decision document (MCBQ IRP Closeout Document No. 5) was signed by the QPMT on October 3, 2001.

A.4.7 BA-07—Building 24009 Battery Accumulation Area No. 2

BA-07 is located on the west side of Building 24009 within Training Area 5-A adjacent to MCB Route 3 in the Camp Barrett area of the MCBQ. This site was used for the storage of waste lead-acid batteries from vehicle maintenance operations in Building 24009. The drained batteries were placed on pallets and stacked on top of each other during the RFA VSI.

Battery draining and neutralization operations are no longer conducted at Building 24009. B-07 is no longer used for the storage of batteries.

The site was closed out under the DTA phase of the IRP. A DTA investigation was completed for the site during FY1998. The results of the DTA investigation were presented at a January 17, 2001 meeting, along with the results of the DTAWS investigations conducted at other Building 24009 located near BA-07. The QPMT agreed that no action was appropriate. A brief decision document (MCBQ IRP Closeout Document No. 5) was signed by the QPMT on October 3, 2001.

A.4.8 BA-08—Building 3063 Battery Accumulation Area

Building 3063 is located within the Mainside of the MCBQ adjacent to the golf course and approximately 700 feet from the northeastern Base boundary. BA-08 is located on the south side of Fuller Road near Building 3066. During a review of available historical documents, inconsistent descriptions of the site were noted in the RFA Report (A.T. Kearney, 1989a and 1989b) and other reports (Geophex, 1992). Existing documents contain discrepancies between site descriptions for BA-08 and BA-13. Based on the historical data review, BA-08 is an area outside of Building 3063 in the Golf Course Maintenance Area, where waste lead-acid batteries were stored in a wooden enclosure (box). The box is approximately 2 feet by 5 feet and is located approximately 1 foot above ground surface. The batteries stored at the site were from tractors used for the maintenance of the Base golf course.

The wooden structure that used to store batteries was present at the site during the DTA site visit, but has since then been removed. Two batteries were stored in the structure during the RFA VSI.

The site was closed out under the DTAWS phase of the IRP. A DTA investigation was conducted at the site during FY1998. The results of the DTA investigation were provided in DTA Report No. 1 (Tetra Tech, 1998a). The QPMT agreed to proceed to a DTAWS investigation, which was completed during FY1999. The results of the DTAWS investigation were presented at a March 1, 2001 meeting, where the QPMT agreed that no action was appropriate. A brief decision document (MCBQ IRP Closeout Document No. 3) for BA-08 was signed by the QPMT on August 30, 2001.

Since the site history supported that contaminants detected at elevated concentrations were more likely to have originated from other golf course maintenance operations (i.e., handling chemicals used for nuisance and

vegetation control) as opposed to battery accumulation activities, further investigation of the Golf Course Maintenance Area was considered appropriate under a new site designation (Site 98).

A.4.9 BA-09—Building 28004 Battery Accumulation Area

BA-09 is located on the northwest side of Building 28004 northeast of Buffalo Road in the southeastern portion of the MCBQ within Training Area 2. Waste lead-acid batteries from heavy equipment were stored on a metal cabinet until transfer to another facility. The batteries were stored approximately 2 feet off the ground surface.

During the DTA site visit, the site was inactive and no pallets or metal cabinet were found. In addition, no activities occurring at the Buffalo Engineering Test Facility require a battery accumulation area.

The site was closed out under the DTA phase of the IRP. A DTA investigation was conducted at the site during FY2000. The results of the DTA investigation were included in DTA Report No. 9 (Tetra Tech, 2001b). The QPMT agreed that no action was appropriate. The report and the signed signature page for the report serve as the brief decision document for the site.

A.4.10 BA-10—Building 2013 Battery Accumulation Area (Site 68)

Building 2013, which is the Motor Vehicle Maintenance Facility for approximately 800 vehicles, is located at the intersection of Barnett Avenue and Cole Street within the Mainside of the MCBQ. BA-10 was located outside of the northwest side of the building. Drained batteries from the battery workshop/area (BA-02) inside Building 2013 were stored on double pallets above a concrete surface, approximately 6 feet by 6 feet. No startup date is available for the site. Approximately 400 batteries, each containing one gallon of lead and electrolyte, were drained each year at the various battery management operations at the Base, as reported by the Initial Assessment Study (NEESA, 1984). Waste battery electrolytes were disposed through a waste removal contractor.

BA-10 is no longer used as a battery accumulation area and has been replaced by Building 2097, which is a new hazardous materials storage locker. Battery draining and neutralization operations are no longer conducted at Building 2013.

The site was closed out under the DTA phase of the IRP. A DTA investigation was conducted at the site during FY1998. The results of the DTA investigation were presented in DTA Report No. 1 (Tetra Tech, 1998a); the QPMT agreed that no action was appropriate. The report and the signed signature page for the report serve as the brief decision document for the site.

A.4.11 BA-11—Building 10 Battery Accumulation Area

BA-11 is located inside FBI Academy Building 10 (Building 27940) on MCB Route 1 in the central portion of the MCBQ on the boundary of Training Areas 8-B and 11-B. The site was approximately a 4-foot by 2-foot concrete area located inside the FBI Maintenance Garage. From the mid-1980s to the mid-1990s, waste lead-acid batteries from the maintenance of approximately 150 vehicles at the garage were stored on pallets above a concrete surface. Prior to the mid-1980s, the batteries were stored outside on pallets in the same location as the present Building 27956. Reportedly, no battery neutralization activities were conducted at the site (Geophex, 1992).

During the 1994 field inventory, batteries were stored on spill containment racks inside a new concrete block hazardous material shed outside of the new Academy Building 28 maintenance garage. During the DTA site visit, Academy Building 10 was vacant; no signs of corrosion or unusual stains were evident on the concrete floor.

The site was closed out under the DTA phase of the IRP. A DTA investigation was completed for the site during FY1999. The results of the DTA investigation were presented in DTA Report No. 6 (Tetra Tech, 2000b); the QPMT agreed that no action was appropriate. The report and the signed signature page for the report serve as the brief decision document for the site.

A.4.12 BA-12—Building 2112 Battery Accumulation Area

BA-12 is located inside Building 2112 within the Mainside of the MCBQ within Training Area 2. The site was a battery accumulation area; various batteries were stored on metal shelves. Dry cell nickel/cadmium, lithium, mercury, and alkaline batteries were stacked up to 3 feet high above a concrete surface during the RFA VSI. Approximately 200 pounds of batteries were picked up for disposal by a waste removal contractor on a monthly basis. Magnesium batteries were subsequently disposed at the Quantico Sanitary Landfill.

During the DTA site visit, a small number of batteries remained on-site, but were scheduled for removal within several months. The concrete floor remained structurally intact with minor staining observed beneath the battery units.

The site was closed out under the DTA phase of the IRP. A DTA investigation was completed in FY2002. The results of the DTA investigation were presented at a March 7, 2002 meeting, where the QPMT agreed that no action was appropriate. A brief decision document (MCBQ IRP Closeout Document No. 10) was signed by the QPMT on April 9, 2002.

A.4.13 BA-13—Building 3066 Battery Accumulation Area

Building 3066 is located within the Mainside of the MCBQ, adjacent to the golf course and approximately 700 feet from the northeastern Base boundary. BA-13 is located on the south side of Fuller Road, near Building 3063. During a review of available historical documents, inconsistent descriptions of the site were noted in the RFA Report (A.T. Kearney, 1989a and 1989b) and other reports (Geophex, 1992). The existing documents contained discrepancies between site descriptions for BA-13 and BA-08. Although both reports indicate that the sites were used for the storage of waste lead-acid batteries from tractors used to maintain the Base golf course, the manner in which the batteries were stored and the location of the storage areas (i.e., outside or inside the associated buildings) differ. Based on a review of the photographs taken during the 1994 field inventory (HNUS, 1995) and other information, it has been determined that the wooden enclosure mentioned in the historical reports is actually BA-08, not BA-13. In addition, the only area identified as being previously used for battery storage is the area outside Building 3063, which is considered BA-08.

The site was closed out under the DTA phase of the IRP. A DTA investigation was conducted at the site during FY1998. The results of the investigation were presented in DTA Report No. 1 (Tetra Tech, 1998a). The QPMT agreed that no action was appropriate, as the site appeared to have been misidentified and confused with BA-08. The DTA Report and the signed signature page for the report serve as the brief decision document for the site.

A.5 Container Accumulation Areas

This section presents brief descriptions of the container accumulation areas, as presented in the Phase II RFA (A.T. Kearney, 1989b).

A.5.1 CA-01—Building 27002 Accumulation Area (Site 70)

This 6-foot by 6-foot drum storage area was located west of Building 27002 south of MCB Route 1 in the CER area within Training Area 8-B. The area contained one waste oil drum, several empty 55-gallon drums, concrete curbing material, and empty paint cans. The closed-top drums were placed in direct contact with Building 27002's gravel lot. Although no staining of the underlying gravel was noted during the RFA VSI, the integrity of the drums was considered to be poor.

During a DTA site visit, the drum storage area was no longer present, and stains were not observed. A building employee stated that the storage area was constructed as a temporary fuel reservoir for Building 27702's boiler after a leak was detected in an underground fuel supply line. Once the repairs to the underground lines were made, the storage area was emptied and removed. Based on the employee's recollection, repairs to the underground lines were completed between 1988 and 1989.

The site was closed out under the DTA phase of the IRP. A DTAWS investigation was conducted at the site during FY2000. The results of the DTAWS investigation were presented at a July 10, 2001 meeting, where the QPMT agreed that no action was appropriate. A brief decision document (MCBQ IRP Closeout Document No. 3) was signed by the QPMT on August 30, 2001.

A.5.2 CA-02—Building 27054 Accumulation Area No. 1 (Site 60)

CA-02 was located in the CER area south of MCB Route 1 within Training Area 8-B in the central portion of the MCBQ. This 6-foot by 2-foot area for bucket storage was located south of the building between a chain-link fence and the former paint locker. During the RFA VSI, the site consisted of upright 5-gallon buckets of oily material and overturned 5-gallon buckets of unknown material. The buckets were stored in direct contact with the gravel lot. Stains were also observed at the site.

During a DTAWS site visit, the buckets were no longer present, and stains were not observed. The stained soil may have been removed from the site or buried beneath new layers of gravel that have been added to the lot.

The site was closed out under the DTAWS phase of the IRP. A DTAWS investigation was conducted at the site during FY2000. The results of the DTAWS investigation were presented at a July 10, 2001 meeting, where the QPMT agreed that no action was appropriate. A brief decision document (MCBQ IRP Closeout Document No. 3) was signed by the QPMT on August 30, 2001.

A.5.3 CA-03—Building 27054 Accumulation Area No. 2 (Site 61)

This 15-foot by 3-foot drum storage area was located along the eastern exterior wall of Building 27054 within the CER area in the central portion of the MCBQ within Training Area 8-B. During the RFA VSI, the area contained six closed-top 55-gallon drums of waste oils, waste antifreeze and waste dry cleaning solvents (PD-680), and an overturned 10-gallon plastic container. A large stained area was observed on the gravel surface beneath and surrounding the drums.

During a DTAWS site visit, several closed-top drums and small containers were observed in the footprint of the former storage unit. However, the unit has been reconstructed and improved with a concrete pad. The concrete pad has a center floor drain and is covered with a wooden roof and walls.

The site was closed out under the DTAWS phase of the IRP. A DTAWS investigation was conducted at the site during FY2000. The results of the DTAWS investigation were presented at a July 10, 2001 meeting, where the QPMT agreed that no action was appropriate. A brief decision document (MCBQ IRP Closeout Document No. 3) was signed by the QPMT on August 30, 2001.

A.5.4 CA-04—Building 27054 Accumulation Area No. 3 (Site 62)

This 50-foot by 10-foot drum storage area was located along the chain-link fence northeast of Building 27054 within the CER area in the central portion of the MCBQ within Training Area 8-B. Waste oils and waste hydraulic fluids, generated from approximately 110 pieces of heavy construction equipment were stored at the site. The storage unit was completely enclosed by a secondary, concrete containment structure. The waste drums were stored upright and placed on a concrete surface. Drums containing products were placed on their sides on elevated metal racks. The area was surrounded by a 1-foot concrete curb. A 2-inch metal pipe at the northeast end of the site discharged accumulated liquids directly onto the adjacent soil, which was heavily stained during the RFA VSI. Stains were also observed within the curbed area.

Stains were not evident during the DTAWS site visit. In addition, no drums were present at the site.

The site was closed out under the DTAWS phase of the IRP. A DTAWS investigation was conducted at the site during FY2000. The results of the DTAWS investigation were presented at a July 10, 2001 meeting, where the QPMT agreed that no action was appropriate. A brief decision document (MCBQ IRP Closeout Document No. 3) was signed by the QPMT on August 30, 2001.

A.5.5 CA-05—Building 27054 Accumulation Area No. 4 (Site 63)

This 50-foot by 15-foot drum storage area was located northeast of Building 27054 within the CER area in the central portion of the MCBQ within Training Area 8-B. This area contained 55-gallon drums of waste antifreeze, waste oil, one 250-gallon diesel fuel tank, five 5-gallon cans of waste grease, two 100-gallon tanks of No. 2 fuel, three overturned pails and bucket, and several empty drums. The diesel tank, the other tanks, and some of the No. 2 fuel product and waste containers were placed on wooden pallets covering the ground during the RFA VSI. All of the wastes were reportedly in closed-top containers. There was a large stain around the diesel fuel tank and extensive staining on the gravel-covered surface.

Storage containers and previously observed stains were not evident during the DTAWS site visit. A concrete hazardous waste storage unit has been constructed within the footprint of the site.

The site was closed out under the DTAWS phase of the IRP. A DTAWS investigation was conducted at the site during FY2000. The results of the DTAWS investigation were presented at a July 10, 2001 meeting, where the QPMT agreed that no action was appropriate. A brief decision document (MCBQ IRP Closeout Document No. 3) was signed by the QPMT on August 30, 2001.

A.5.6 CA-06—Building 24009 Accumulation Area No. 1 (Site 64)

This 20-foot by 15-foot drum storage area was located on a common area of the concrete wash rack pad at Building 24009 within the Camp Barrett area of the MCBQ adjacent to MCB Route 3 within Training Area 7-B. This area managed products and wastes, reportedly consisting of two 5-gallon cans of waste grease. The product drums appeared to be rusted although no leaks were observed. During the RFA VSI, there were stains on the concrete pad and it was not certain whether or not there were cracks in the concrete. The entire pad discharged to a settling pit, which discharged into the storm sewer system (M-01).

The site is no longer used as an accumulation area and has been replaced by Building 27009, a new hazardous and explosive materials shelter.

The site was closed out under the DTAWS phase of the IRP. A DTAWS was conducted during FY1998. The results of the DTAWS investigation were presented to the QPMT at a January 17, 2001 meeting, where the QPMT agreed that no action was appropriate. A brief decision document (MCBQ IRP Closeout Document No. 2) was signed by the QPMT on July 10, 2001.

A.5.7 CA-07—Building 24009 Accumulation Area No. 2 (Site 65)

This 15-foot by 5-foot drum storage area was located inside Building 24009 within the Camp Barrett area of the MCBQ adjacent to MCB Route 3 within Training Area 7-B. During the RFA VSI, waste oils and solvents, product

solvents, oils and antifreeze were stored at the site on a concrete surface. All containers were closed-top, and the concrete surface had no cracks. Light staining was observed on the floor.

The site is no longer used as an accumulation area and has been replaced by Building 27009, a new hazardous and explosive materials shelter.

The site was closed out under the DTAWS phase of the IRP. A DTAWS was conducted in FY1998. The results of the DTAWS investigation were presented to the QPMT at a January 17, 2001 meeting, where the QPMT agreed that no action was appropriate. A brief decision document (MCBQ IRP Closeout Document No. 2) was signed by the QPMT on July 10, 2001.

A.5.8 CA-08—Building 24009 Accumulation Area No. 3 (Site 66)

This 4-cubic foot drum storage area was located inside Building 24009 within the Camp Barrett area of the MCBQ adjacent to MCB Route 3 within Training Area 7-B. A mobile metal unit located above a concrete floor inside the building was used for the storage of 55-gallon drums of waste diesel and waste oils. No visible evidence of a release was noted during the RFA VSI.

The site is no longer used as an accumulation area and has been replaced by Building 27009, a new hazardous and explosive materials shelter.

The site was closed out under the DTAWS phase of the IRP. A DTAWS was conducted during FY1998. The results of the DTAWS investigation were presented at a January 17, 2001 meeting, where the QPMT agreed that no action was appropriate. A brief decision document (MCBQ IRP Closeout Document No. 2) was signed by the QPMT on July 10, 2001.

A.5.9 CA-09—Building 24009 Accumulation Area No. 4 (Site 67)

This 6-foot by 6-foot drum storage area was located southwest of Building 24009 within the Camp Barrett area of the MCBQ adjacent to MCB Route 3 within Training Area 7-B. During the RFA VSI, six closed-top 55-gallon drums of waste petroleum, oil, and lubricants (POL) were stored on wooden pallets over bare soil and were covered by a canvas tarp.

The site was deferred to another regulatory program during the DTAWS phase of the IRP. During the FY1998 DTAWS investigation, it was determined that the site was still active. The results of the investigation were presented at an April 10, 2001 meeting, where the QPMT agreed to defer the investigation of the site to the RCRA program. Thus, no action under the IRP is required. A brief decision document (MCBQ IRP Deferral Document No. 2) was signed by the QPMT on December 11, 2001.

A.5.10 CA-10—Building 24007 Accumulation Area No. 1 (Site 54)

This 20-foot by 20-foot roofed drum storage area is located southwest of W-02 behind Building 24007 within the Camp Barrett area of the MCBQ adjacent to MCB Route 3 within Training Area 7-B. This area contained two 5-gallon cans of paint. During the RFA VSI, paint residue was observed on the soil underneath the cans, and the area was devoid of vegetation.

The site is no longer used as an accumulation area.

The site was closed out under the DTAWS phase of the IRP. A DTAWS investigation was conducted in FY2002. The results of the DTAWS investigation were presented at an April 9, 2002 meeting, where the QPMT agreed that no action was appropriate. A brief decision document (MCBQ IRP Closeout Document No. 14) was signed by the QPMT on May 16, 2002.

A.5.11 CA-11—Building 27241 Accumulation Area

This 10-foot by 10-foot drum storage area was located inside the south end of Building 27241 in the FBI Academy Rebuilding Shop on MCB Route 1 in the central portion of the MCBQ. This area managed waste corrosives

generated for weapons refinishing. Corrosive wastes were stored in three closed-top plastic drums, labeled as containing muriatic acid, ethylene glycol, and Stoddard solvent. The drums were placed on individual pallets over a concrete floor. During the RFA VSI, no cracks were observed in the floor. The outside of one drum and the concrete floor showed visible evidence of a spill of caustic material.

The site is used by the MCBQ Rifle Team for firearm cleaning and repair. This is an indoor high security area for temporary storage of drums. Safety Kleen recycling activities were conducted at the site.

The site was closed out under the DTAWS phase of the IRP. A DTA was conducted for the site in FY2002. The results of the DTA investigation were presented at a July 18, 2002 meeting, where the QPMT agreed to proceed to a DTAWS investigation. The sampling design for the DTAWS investigation was presented in the FY2002 DTAWS Work Plan (Tetra Tech, 2002). The results of the DTAWS investigation were presented at a March 5, 2003 QPMT meeting, where the QPMT tentatively agreed that no action may be appropriate. At an April 23, 2003 meeting with EPA Technical Support, the QPMT confirmed that no action was appropriate. A brief decision document (MCBQ IRP Closeout Document No. 27) was signed by the QPMT on April 23, 2003.

A.5.12 CA-12—Building 27214 Accumulation Area (Site 43)

This 6-foot by 6-foot area was located on the west side of Building 27214 on MCB Route 1 in the central portion of the MCBQ on the boundary of Training Areas 8-B and 11-B. The site contained one 55-gallon closed-top drum containing waste oil. During the RFA VSI, the drum was observed to be placed in direct contact with the soil. Also, two product drums were leaking from their spouts, staining the surrounding soil. The vegetation at the site was also stressed.

The site is no longer used as an accumulation area. During the DTA site visit, there was no visible evidence of contamination.

The site was closed out under the DTAWS phase of the IRP. The sampling design for the DTAWS investigation was presented in the FY2002 DTAWS Work Plan (Tetra Tech, 2002). The results of the DTAWS investigation were presented at a March 5, 2003 QPMT meeting, where the QPMT agreed that no action was appropriate. A brief decision document (MCBQ IRP Closeout Document No. 27) was signed by the QPMT on April 23, 2003.

A.5.13 CA-13—Building 27942 Accumulation Area

This 15-foot by 15-foot container accumulation area was located inside the FBI Academy Forensic Lab in Building 27942 on MCB Route 1 in the central portion of the MCBQ. The site was a concrete vault located on a concrete surface with an 8-inch berm surrounding the room. The floor drain inside the vault reportedly drains to the sanitary sewer system (M-02). During the RFA VSI, the vault contained laboratory wastes and chemical products in closed-top containers less than one-gallon in size. Some staining of the concrete floor was noted.

During the 1994 field inventory, it was observed that the area referred to as CA-13 is the chemical storage vault for the FBI Academy Forensic Lab. The floor drain was sealed to prevent discharge to the sanitary sewer. Only minor staining was visible on the concrete floor.

The site was closed out under the DTA phase of the IRP. A DTA investigation was conducted for the site in FY2002. The results of the DTA investigation were presented at a June 5, 2002 meeting, where the QPMT agreed that no action was appropriate. A brief decision document (MCBQ IRP Closeout Document No. 23) was signed by the QPMT on July 18, 2002.

A.5.14 CA-14—Building 27956 Accumulation Area

This 3-foot high, 15-foot wide, 200-foot long drum storage area was located on the east side of Building 27956 on MCB Route 1 in the central portion of the MCBQ at the boundaries of Training Areas 8-B and 11-B. The site was a concrete loading dock containing asphalt sealer, paints, paint thinner wastes, seven 55-gallon drums, and several small metal containers. These wastes were generated from painting activities at the Training Support and Services

Unit. The start-up date for the site is thought to be during the 1980s. During the RFA VSI, two drums were uncovered and many of the cans and drums were corroded. Some rust was observed on the loading dock wall.

The site is no longer used as an accumulation area and has been replaced by Building 27956, a new hazardous materials storage shelter.

The site was closed out under the DTA phase of the IRP. A DTA investigation was conducted at the site during FY2000. The results of the investigation are included in DTA Report No. 9 (Tetra Tech, 2001b); the QPMT agreed that no action was appropriate. The DTA Report and the signed signature page for the report serve as the brief decision document for the site.

A.5.15 CA-15—Building 10 Accumulation Area

This 15-foot by 5-foot drum storage area was located inside Building 10 on MCB Route 1 in the central portion of the MCBQ on the boundary of Training Areas 8-B and 11-B. This area managed wastes from vehicle maintenance and contained three 55-gallon waste POL drums and two 55-gallon product oil drums. During the RFA VSI, all the drums were closed-top and palletized on a concrete floor. One of the product drums was covered by a tarp and surrounded by absorbent material. Minor stains were noticed on the floor.

With the exception of Safety Kleen recycled oil/antifreeze, no hazardous wastes were stored at the site.

The site was closed out under the DTA phase of the IRP. A DTA was conducted for the site in FY2002. The results of the DTA investigation were presented to the QPMT at a June 5, 2002 meeting, where the QPMT agreed that no action was appropriate. A brief decision document (MCBQ IRP Closeout Document No. 23) was signed by the QPMT on July 18, 2002.

A.5.16 CA-16—Building 4 Accumulation Area (Site 34)

This 10-foot by 6-foot accumulation area was located on the east side of Building 4 in the Mainside of the MCBQ within Training Area TA-2 adjacent to the Potomac River. The site managed waste POL (approximately 1,500 to 2,000 gpy of waste oil) from the maintenance of vehicles. The waste was managed in two closed-top 55-gallon drums and a closed-top tank. During the RFA VSI, absorbent material was spread about the base of the drums, and stains were noticed on the surrounding pavement.

The accumulation area is no longer present and has been replaced by a new hazardous materials storage shelter.

The site was closed out under the EE/CA phase of the IRP. A DTAWS investigation was completed at the site during FY1999. Upon completion of the DTAWS field effort, the QPMT decided to proceed to an SSP investigation at all Building 4 sites, including CA-16. An SSP investigation was conducted at the site during FY2001. The results of the investigation were presented to EPA Technical Support and QPMT at a July 9, 2002 meeting. The QPMT agreed that the site should proceed to an EE/CA. A final EE/CA report (Tetra Tech, 2004a) was submitted to the QPMT on February 10, 2004. The Action Memorandum (EFACHES, 2004a) was signed by the Navy on March 8, 2004. An interim removal action was completed at the site, as documented in the associated Closeout Report (Horne Engineering Service, Inc., 2004). A brief decision document (MCBQ IRP Closeout Document No. 32) was signed by the QPMT on September 29, 2004. A multiple-site ROD (NAVFAC, 2008), describing the need for NFA following removal action activities at Sites 8, 9, 10, 21, 32, 33, 34, and 98, was signed by MCBQ in August 2008 and EPA in September 2008.

A.5.17 CA-17—Building 3230 Accumulation Area (Site 47)

This 40-foot by 10-foot containment area was located south of Building 3230 in the Mainside of the MCBQ within Training Area TA-2 about 70 feet west of the Potomac River. This area managed waste POL, solvents, hydraulic fluids, antifreeze, unknowns, and other products. The area contained six 55-gallon drums on an elevated metal rack above a concrete floor. Waste drums were stored upright on a concrete surface surrounded by an 8-inch concrete curb, which served as a secondary containment structure. A valve at the northwest corner of the

building discharged water to a soil/gravel surface, where stains were observed during the RFA VSI. Stains were also noted on the concrete surface.

The site is no longer used as an accumulation area and has been replaced by Building 27009, a new hazardous materials storage shelter.

The site was closed out under the DTAWS phase of the IRP. A DTAWS investigation was conducted at the site during FY2001. The results of the DTAWS were presented to the QPMT at a June 5, 2002 meeting, where the QPMT agreed that no action was appropriate. A brief decision document (MCBQ IRP Closeout Document No. 16) was signed by the QPMT on June 5, 2002.

A.5.18 CA-18—Building 2112 Accumulation Area No. 1

This 6-foot by 6-foot drum storage area was located on the west side of Building 2112 in the Mainside of the MCBQ within Training Area TA-2 adjacent to the Potomac River. Five 55-gallon closed-top drums containing waste from the restoration of aircraft, tanks, trucks, guns, or other equipment (waste paint thinners, strippers, epoxy paints and oil) were stored on a sound concrete surface. Light staining was noted on the concrete during the RFA VSI.

The site is no longer used as an accumulation area and has been replaced by a new hazardous materials storage shelter.

The site was closed out under the DTA phase of the IRP. A DTA was conducted at the site during FY2002. The results of the DTA investigation were presented to the QPMT at a March 7, 2002 meeting, where the QPMT agreed that no action was appropriate. A brief decision document (MCBQ IRP Closeout Document No. 10) was signed by the QPMT on April 9, 2002.

A.5.19 CA-19—Building 2112 Accumulation Area No. 2

This 15-foot by 10-foot drum storage area was located on the north side of Building 2112 (Larson's Gym) in the Mainside of the MCBQ within Training Area TA-2 adjacent to the Potomac River. The site was underlain by a 6-inch thick concrete slab, surrounded by a 6-inch secondary containment curb. Waste oils, Freon, solvents, antifreeze, gas, hydraulic fluid, and diesel and battery electrolyte were stored at the site, which is located inside Larson's Gym. The area was divided into regulated and non-regulated hazardous waste storage areas using bags of absorbent material. The drums were closed-top and noted to be in good condition during the RFA VSI.

The site is no longer used as an accumulation area and has been replaced by a new hazardous materials storage shelter.

The site was closed out under the DTA phase of the IRP. A DTA investigation was conducted during FY2002. The results of the DTA investigation were presented at a March 7, 2002 meeting, where the QPMT agreed that no action was appropriate. A brief decision document (MCBQ IRP Closeout Document No. 10) was signed by the QPMT on April 9, 2002.

A.5.20 CA-20—Building 2130 Accumulation Area (Site 40)

This 4-foot by 4-foot drum storage area was located immediately adjacent to the southwestern corner of Building 2130 in the Mainside of the MCBQ within Training Area TA-2 adjacent to the Potomac River. During the RFA VSI, two closed-top 55-gallon drums containing waste JP-4 fuel, degreasing solvents, and oil from the Maintenance Shop near Larson's Gym (Building 2112) were situated directly on the underlying soil. The fluids were reportedly generated from maintenance activities that occurred within a Maintenance Shop located near Larsons Gym (A.T. Kearney, 1989a and 1989b). During the RFA VSI, stains were observed on soil underneath and surrounding the drums.

During a DTAWS site visit, no drums or surface soil stains were observed at the site. The site was overgrown with grass.

The site was closed out under the DTAWS phase of the IRP. A DTAWS investigation was conducted at the site during FY2000. The results of the DTAWS investigation were presented at a May 31, 2001 meeting, where the QPMT agreed that no action was appropriate. A brief decision document (MCBQ IRP Closeout Document No. 3) was signed by the QPMT on August 30, 2001.

A.5.21 CA-21—Building 2101 Accumulation Area No. 1 (Site 50)

This site was located in the "Green" Side Product Storage Area on a common pad shared with W-06 (Building 2101 Wash rack) north of Building 2101 within the Mainside of the MCBQ on the northwest side of Rowell Road. Waste oils and solvents were stored at the site on a concrete surface. During the RFA VSI, this site was the only inactive site of the 51 CAs identified at MCBQ; the area was used to store product oil, antifreeze, and solvents. No releases or visible evidence of contamination were noted.

During a DTAWS site visit, no visible evidence of contamination was apparent. The site is no longer used as an accumulation area and has been replaced by a new hazardous materials storage shelter, Building 2101.

The site was closed out under the SSP phase of the IRP. A DTAWS investigation was conducted at the site during FY1999. The QPMT agreed to proceed to an SSP investigation at several sites in the immediate vicinity of CA-21, even though a DTAWS report was not prepared for the site. The SSP investigation was conducted in FY2001. The results of the DTAWS and SSP investigations were presented at a July 9, 2002 meeting, where the QPMT agreed that no action was appropriate. A brief decision document (MCBQ IRP Closeout Document No. 22) was signed by the QPMT on July 9, 2002.

A.5.22 CA-22— Building 2101 Accumulation Area No. 2 (Site 45)

This 100-foot by 30-foot storage area was located north of Building 2101 within the Mainside of the MCBQ on the northwest side of Rowell Road and northeast of CA-21. The area managed waste oils, solvents, paints and thinners, contaminated hydraulic fluid and JP-4 fuel, flammables, corrosives and scrap metal. The wastes were stored in 55-gallon drums; most of the drums were placed on pallets located on an asphalt pad. During the RFA VSI, the area was surrounded by bags of absorbent material stacked to a height of four inches for secondary containment. One drum was turned over and the area around it was stained. The asphalt pad was deteriorated and the adjacent soil was stained (A.T. Kearney, 1989a and 1989b).

The site is no longer used as an accumulation area and has been replaced by a new hazardous materials storage shelter, Building 2101.

The site was closed out under the SSP phase of the IRP. A DTAWS investigation was conducted at the site during FY1999. The QPMT agreed to proceed to an SSP investigation at several sites in the immediate vicinity of CA-22, even though a DTAWS report was not prepared for the site. The SSP investigation was conducted in FY2001. The results of the DTAWS and SSP investigations were presented to the QPMT at a July 9, 2002 meeting, where the QPMT agreed that no action was appropriate. A brief decision document (MCBQ IRP Closeout Document No. 22) was signed by the QPMT on July 9, 2002.

A.5.23 CA-23—Building 2103 Accumulation Area (Site 44)

This 450 square foot drum storage area was located southeast of Building 2103 within the Mainside of the MCBQ on the southeast side of Rowell Road. Several 55-gallon drums containing waste oil, hydraulic fluid, paint stripper and thinner, and fuel were situated on aluminum grates with catch pans and placed on top of a deteriorating surface. Absorbent bags were placed around the area to a height of 4 inches for secondary containment. During the RFA VSI, stains were observed on the concrete and one aluminum pan contained an unidentified liquid.

The site is no longer used as an accumulation area and has been replaced by a new hazardous materials storage shelter.

The site was closed out under the DTAWS phase of the IRP. A DTAWS investigation was conducted at the site during FY2001. The results of the DTAWS investigation were presented to the QPMT at a March 7, 2002 meeting,

where the QPMT agreed that no action was appropriate. A brief decision document (MCBQ IRP Closeout Document No. 9) was signed by the QPMT on April 9, 2002.

A.5.24 CA-24—Building 5107 Accumulation Area (Site 71)

This 6-foot by 6-foot drum storage area was located on the north side of Building 5142 in the vicinity of the Aero Club within the Mainside of the MCBQ to the east of Runway 20 of Marine Corps Air Facility Turner Field. The site was used to store drums of unknown content on the ground surface. During the RFA VSI, the contents of one drum had an odor similar to paint (A.T. Kearney, 1989a and 1989b).

The site is no longer used as an accumulation area. Building 5142 is used for storage. No visible evidence of contamination was observed at the site during a DTAWS site visit.

The site was closed out under the DTAWS phase of the IRP. A DTAWS investigation was conducted at the site during FY1999. The results of the DTAWS investigation were presented in DTAWS Report No. 5 (Tetra Tech, 2000e). The results of the investigation were subsequently discussed with the QPMT during a December 12, 2000 meeting and with the EPA Technical Support during a January 1, 2001 meeting. The QPMT agreed that no action was appropriate during an April 10, 2001 site visit. A brief decision document (MCBQ IRP Closeout Document No. 2) was signed by the QPMT on July 10, 2001.

A.5.25 CA-25—Mainside Sewage Treatment Plant Accumulation Area (Site 42)

This 20-foot by 10-foot accumulation area was located on the northern portion of the Mainside STP area north of Epperson Road along the Potomac River. During the RFA VSI, closed-top drums containing waste oil and solvents were placed directly on the base ground surface. Stained soil was observed.

The site is no longer used as an accumulation area.

The site was closed out under the DTAWS phase of the IRP. A DTAWS investigation was scheduled to be conducted at the site during FY2001. However, during an April 12, 2001 site visit, the QPMT agreed that no action was appropriate. A brief decision document (MCBQ IRP Closeout Document No. 4) was signed by the QPMT on October 3, 2001.

A.5.26 CA-26—Building 663 Accumulation Area

CA-26 was located within the Mainside of the MCBQ north of Epperson Road along the Potomac River. This 15-foot by 15-foot drum storage area was located behind Building 663 on a common pad shared with W-06. It contained five 55-gallon closed-top drums located on concrete with a 2-foot curb on one side and a 4-foot curb on the other side for secondary containment. During the RFA VSI, facility representatives reported that the drums had been tested and were “clean”. The concrete at the site was deteriorated.

The site is no longer used as an accumulation area. During the 1994 field inventory, there was no visible evidence of contamination.

This site was deferred to another regulatory program as a result of the Findings of Fact in the FFA (EPA, 1998). Thus, no action under the IRP is required.

A.5.27 CA-27—Camp Upshur STP Accumulation Area (Site 41)

This 100 square foot drum storage area surrounded the shed behind Building 2666 in the Camp Upshur STP area within Training Area 17-B. The Base was not aware of this area until it was discovered during the RFA VSI. Stains were observed on the ground surface surrounding the shed. The wastes managed at the unit consisted of waste oils, Oakite (a caustic substance), trash, and a cabinet of paint cans. The area was partially lined with gravel.

The site is no longer used as an accumulation area. During the 1994 field inventory, there was no visible evidence of contamination.

The site was closed out under the DTAWS phase of the IRP. A DTAWS investigation was conducted at the site during FY2001. The results of the DTAWS investigation were presented at a June 5, 2002 meeting, where the QPMT agreed to proceed to a supplemental DTAWS investigation. The sampling design for the DTAWS investigation is presented in the FY2002 DTAWS Work Plan (Tetra Tech, 2002). The results of the supplemental DTAWS investigation were presented at a March 5, 2003 QPMT meeting, where the QPMT agreed that no action was appropriate. A brief decision document (MCBQ IRP Closeout Document No. 27) was signed by the QPMT on April 23, 2003.

A.5.28 CA-28—Building 28000 Accumulation Area No. 1 (Site 39)

This 60-foot by 10-foot containment area was located south of Building 28000 north of Buffalo Road in Training Area 2 and south of Chopawamsic Creek. Closed-top drums containing waste oil, ethylene glycol, solvents, kerosene, unknowns, and product oils were stored on pallets over a concrete surface with a 1-foot concrete curb for secondary containment. The drums were covered by a metal roof. A polyvinyl chloride pipe and valve were located at the southern end of the accumulation area. During the RFA VSI, stains were observed on the concrete, adjacent soil, and soil underneath the release valve.

The site is no longer used as an accumulation area. The site has been replaced by a new hazardous storage shelter.

The site was closed out under the DTAWS phase of the IRP. A DTAWS investigation was conducted at the site during FY1999. The results of the DTAWS investigation were presented to the QPMT at a March 1, 2001 meeting and further discussed during a May 15, 2001 conference call. The QPMT agreed that no action was appropriate. A brief decision document (MCBQ IRP Closeout Document No. 7) was signed by the QPMT on December 11, 2001.

A.5.29 CA-29—Building 28000 Accumulation Area No. 2 (Site 46)

This 6-foot by 6-foot drum storage area was located to the west of CA-28 north of Buffalo Road in Training Area 2 and south of Chopawamsic Creek. The area contained unidentified waste inside fire-fighting foam drums. Five 55-gallon closed-top drums were placed in direct contact with the ground surface. During the RFA VSI, stains were noted on the soil surrounding the drums.

The site is no longer used as an accumulation area. The site has been replaced with a new hazardous materials storage shelter.

The site was closed out under the DTAWS phase of the IRP. A DTAWS investigation was conducted at the site during FY1999. The results of the DTAWS investigation were presented at March 1, 2001 meeting and further discussed during a May 15, 2001 conference call. The QPMT agreed that no action was appropriate. A brief decision document (MCBQ IRP Closeout Document No. 7) was signed by the QPMT on December 11, 2001.

A.5.30 CA-30—Building 28000 Accumulation Area No. 3 (Site 72)

This 6-foot by 3-foot drum storage area was located to the west of CA-28 north of Buffalo Road in Training Area 2 and south of Chopawamsic Creek. Three severely corroded 55-gallon drums were present on the ground surface at the time of the RFA VSI. The drum contents were unknown.

The drums are no longer present at the site. The site has been replaced by a new hazardous materials storage shelter.

The site was closed out under the DTAWS phase of the IRP. A DTAWS investigation was conducted at the site during FY1999. The results of the DTAWS investigation were presented at a March 1, 2001 meeting and further discussed during a May 15, 2001 conference call. The QPMT agreed that no action was appropriate. A brief decision document (MCBQ IRP Closeout Document No. 7) was signed by the QPMT on December 11, 2001.

A.5.31 CA-31—Building 3254 Accumulation Area (Site 73)

This 150 square foot drum storage area was located on the southern and eastern exterior sides of Building 3254 on Range Road in the Mainside of the MCBQ. During the RFA VSI, the storage area contained three product drums and a closed-top waste oil drum. The product drums were stored on their sides, while the waste oil drum was stored on a pallet sitting on the soil and gravel lot. Reportedly, both the drum pallet and the ground beneath were heavily stained with an oily residue.

The site is no longer used as an accumulation area and has been replaced by Building 3254, a new hazardous materials storage shelter.

The site was deferred to another regulatory program during the DTAWS phase of the IRP. A DTAWS investigation was completed for the site during FY2000. The results of the DTAWS investigation were presented at a May 31, 2001 meeting, where the QPMT agreed to proceed to a supplemental DTAWS investigation. The results of the FY2001 supplemental DTAWS investigation were presented at a December 11, 2001 meeting, where the QPMT agreed to defer the site to the UST program. Thus, no action under the IRP is required. A brief decision document (MCBQ IRP Deferral Document No. 5) was signed by the QPMT on July 18, 2002.

A.5.32 CA-32—Building 3252 Paint Shop Accumulation Area (Site 69)

This site was a 20-foot by 10-foot drum and can storage area located inside the Building 3252 Paint Shop near the rear loading ramp in the Mainside of the MCBQ. Several closed-top waste drums containing waste and product paint, paint thinners, rags, and cans were stored at the site. The waste was produced at the Paint Shop (reportedly 150 to 200 gpy of PD-680 and thinner combined). During the RFA VSI, the concrete floor beneath the accumulation area was observed to be moderately stained with paint, suggesting improper storage handling activities.

The site was still actively used for storage during a DTAWS site visit. One closed-top 55-gallon drum and several 1-gallon cans of paint and paint products were observed. According to Paint Shop personnel, product fluids only were stored at the site. Waste fluids were stored in a hazardous materials storage locker located southeast of Building 3252.

The site was closed out under the DTAWS phase of the IRP. A DTAWS investigation was conducted at the site during FY2000. The results of the DTAWS investigation were presented at a May 31, 2001 meeting, where the QPMT agreed that no action was appropriate. A brief decision document (MCBQ IRP Closeout Document No. 3) was signed by the QPMT on August 30, 2001.

A.5.33 CA-33—Building 2208 Accumulation Area (Site 35)

This 2-foot by 2-foot drum storage area was located on the outside of Building 2208 to the North of Willis Street near the Naval Regional Medical Clinic within the Mainside of the MCBQ. During the RFA VSI, a closed-top drum containing Univolt 60 was sitting directly on the soil outside the south side of the building. A large stain was observed underneath the drum.

No drums or visible evidence of contamination were present at the site during the DTAWS site visit. Wastes were stored in a new hazardous waste storage locker located east of Building 2208.

The site was closed out under the DTAWS phase of the IRP. A DTAWS investigation was conducted at the site during FY1998. The results of the DTAWS investigation were presented in DTAWS Report No. 1 (Tetra Tech, 2000f). The QPMT agreed to proceed to an SSP investigation during FY2001. However, based on a reevaluation of the detected chemical concentrations (i.e., comparison to alternative risk-based screening criteria), the QPMT agreed that no action was appropriate during a March 1, 2001 meeting. A brief decision document (MCBQ IRP Closeout Document No. 1) was signed by the QPMT on May 30, 2001.

A.5.34 CA-34—Building 3066 Accumulation Area (Site 38)

This 4-foot by 4-foot container storage area was located adjacent to an UST standpipe to the east of Building 3066 in the northern portion of the Mainside of the MCBQ. The site was used to store waste oils and solvents from activities associated with golf course maintenance. Closed-top drums containing waste oils and solvents were placed directly on the ground surface. During the RFA VSI, stains were observed at the site.

The accumulation area is no used as an accumulation area and has been replaced by a new hazardous waste storage locker. During the DTAWS site visit, the area was a vacant portion of the golf course maintenance lot.

The site was closed out under the DTAWS phase of the IRP. A DTAWS investigation was completed in FY1999. The results of the DTAWS investigation were presented at a March 1, 2001 meeting, where the QPMT agreed that no action was appropriate. A brief decision document (MCBQ IRP Closeout Document No. 3) was signed by the QPMT on August 30, 2001.

A.5.35 CA-35—Building 2013 Accumulation Area No. 1 (Site 74)

This site was located in the Mainside of the MCBQ west of Building 2013 and adjacent to Building 2091 near Barnett Avenue. The site consisted of a 5-foot by 5-foot drum storage area and an 8-foot by 3-foot (400-gallon) wheeled bowser. During the RFA VSI, the area contained waste oil and solvents in two 55-gallon closed-top drums, which were elevated above the ground surface along with the wheeled bowser that contained waste oil. The wastes were reportedly from the maintenance of vehicles. The waste solvent drum was placed on a wooden pallet, and the waste oil drum was situated on asphalt pavement. Stains were observed on the asphalt pavement next to the waste solvent drum.

The accumulation area and the stained pavement are no longer present at the site. According to Base personnel, Building 2091 was demolished sometime after 1988 and replaced with a new hazardous waste storage shed (Building 2097). In addition to the new building, the lot containing the former site appeared to have been repaved recently during the DTAWS site visit.

The site was closed out under the DTAWS phase of the IRP. A DTAWS investigation was conducted at the site during FY2000. The results of the DTAWS investigation were presented at a March 1, 2001 meeting, where the QPMT agreed that no action was appropriate. A brief decision document (MCBQ IRP Closeout Document No. 2) was signed by the QPMT on July 10, 2001.

A.5.36 CA-36—Building 2013 Accumulation Area No. 2 (Site 75)

This site was located in the Mainside of the MCBQ to the north of Barnett Avenue. This 6-foot by 2-foot drum storage area was located inside Building 2013, against the buildings southernmost interior wall, adjacent to W-07 (wash rack). Fifty-five-gallon drums containing waste oil, waste antifreeze, and waste hydraulic fluid were palletized on a concrete floor. During the RFA VSI, petroleum stains were observed on the concrete floor, which was in good condition. Run-off from the site discharged to the storm sewer system (M-01).

The accumulation area has been replaced by a new hazardous waste storage shed (Building 2097). During a DTAWS site visit, the concrete floor in the vicinity of the former accumulation area appeared to be in good condition with a few small cracks. Water stains were also evident. However, petroleum-related stains on the concrete floor were not observed.

The site was closed out under the DTAWS phase of the IRP. A DTAWS investigation was conducted at the site during FY2000. The results of the DTAWS investigation were presented at an April 10, 2001 meeting, where the QPMT agreed that no action was appropriate. A brief decision document (MCBQ IRP Closeout Document No. 2) was signed by the QPMT on July 10, 2001.

A.5.37 CA-37—Building 2008 Accumulation Area

CA-37 was located to the north of Hawkins Road and to the South of Elliot Road in the Mainside of the MCBQ. This 4-foot by 4-foot drum storage area was located outside of Building 2008. Two closed-top 55-gallon drums

containing flammable wastes from microfiche copying machines were situated on concrete. To provide secondary containment, a 4-inch concrete curb was present.

The site is no longer used as an accumulation area and has been replaced by Building 2008, a new hazardous waste storage shelter.

The site was closed out under the DTA phase of the IRP. A DTA investigation was conducted during FY2001. The results of the investigation were presented to the QPMT during an October 3, 2001 meeting, where the QPMT agreed that no action was appropriate. A brief decision document (MCBQ IRP Closeout Document No. 6) was signed by the QPMT on November 8, 2001.

A.5.38 CA-38—Building 2006A Accumulation Area (Site 36)

This site was located to the north of Hawkins Road and to the south of Elliot Road in the Mainside of the MCBQ. This 10-foot storage area was located outside on a gravel area adjacent to Building 2006A. Closed-top drums, containing waste solvents, Contract Laboratory Repair, rags, and perchloroethylene (dry-cleaning solvent) from weapons cleaning and repair activities performed at Marine Security Guard Armory, were present at the site along with a garbage dumpster. During the RFA VSI, stains were observed on the gravel area surrounding the site.

No visible evidence of contamination was noted at the site during a DTAWS site visit. Building 2006A, which was located on a concrete pad protected by a wooden roof, housed parts washing equipment. Safety Kleen Corporation was responsible for managing recycling of waste solvents generated from washing activities.

The site was closed out under the DTAWS phase of the IRP. A DTAWS investigation was completed for the site during FY1999. The results of the investigation were presented at the December 12, 2000 meeting, where the QPMT agreed that no action was appropriate. A brief decision document (MCBQ IRP Closeout Document No. 2) was signed by the QPMT on July 10, 2001.

A.5.39 CA-39—Building 3035 Accumulation Area

CA-39 was located to the south of Barnett Avenue adjacent to the RF&P Railroad in the Mainside of the MCBQ. This 5-foot by 5-foot drum storage area was located at the front entrance to Building 3035. Two closed-top 55-gallon drums, containing waste diatomaceous earth contaminated with perchloroethylene, were situated on a concrete pad beside a grassy area. No releases were identified during the RFA VSI.

During the DTA site visit, this site was used for the storage of two drums of new and waste solvent. No evidence of contamination was observed.

The site was closed out under the DTA phase of the IRP. A DTA investigation was conducted during FY2001. The results of the investigation were presented to the QPMT at an October 3, 2001 meeting, where the QPMT agreed that no action was appropriate. A brief decision document (MCBQ IRP Closeout Document No. 6) was signed by the QPMT on November 8, 2001.

A.5.40 CA-40—Building 2113 Accumulation Area No. 1 (Site 76)

CA-40 was located between the RF&P Railroad and Potomac River in the Mainside of the MCBQ within Training Area 2. This 15-foot by 15-foot drum storage area was located on the north side of Building 2113. Closed-top 55-gallon drums that once contained waste lube oil and Betz Entac 717 (a corrosive) were located on the concrete next to the building. During the RFA VSI, the drums were corroded. Stains were observed on the concrete, which was found to be in poor condition.

During the SSP site visit, the site was no longer used as an accumulation area. Also, no visible evidence of contamination was found.

The site was closed out under the SSP phase of the IRP. Although the site was originally identified as a DTAWS site, an SSP investigation was conducted for all sites in the immediate vicinity of Building 2113 in FY2001. The results of the SSP investigation were presented to the QPMT at a July 9, 2002 meeting, where the QPMT agreed

that no action was appropriate. A brief decision document (MCBQ IRP Closeout Document No. 22) was signed by the QPMT on July 9, 2002.

A.5.41 CA-41—Building 2113 Accumulation Area No. 2 (Site 77)

CA-41 was located between the RF&P Railroad and Potomac River in the Mainside of the MCBQ within Training Area 2. This 3-foot by 3-foot drum storage area was located on the south side of Building 2113. One 55-gallon drum, containing waste of a rubbery substance similar to dry paint, was placed on the bare ground surface during the RFA VSI. The drum was corroded and had an open hole at the bottom. However, no stains were noticed on the soil.

During the SSP site visit, the site was no longer used as an accumulation area. Also, no visible evidence of contamination was found.

The site was closed out under the SSP phase of the IRP. Although the site was originally identified as a DTAWS site, an SSP investigation was conducted for all sites in the immediate vicinity of Building 2113 in FY2001. Based on information presented in the FY2001 SSP Work Plan (Tetra Tech, 2001c) and an April 12, 2001 site visit, the QPMT agreed that no action was appropriate. A brief decision document (MCBQ IRP Closeout Document No. 12) was signed by the QPMT on November 7, 2001.

A.5.42 CA-42—Building 3045 Accumulation Area

CA-42 was located in the Mainside of the MCBQ to the south of Barnett Avenue and adjacent to Harris Road and the RF&P Railroad. This 15-foot by 5-foot containment area was located on the east side of Building 3045. The site managed wastes from machine shop welding, optics, and small-arms repair activities in Building 3045. A concrete berm was used as secondary containment.

The site is no longer used as an accumulation area. No visible evidence of contamination was found during the DTA site visit.

The site was closed out under the DTA phase of the IRP. A DTA investigation was conducted during FY2001. The results of the DTA investigation were presented to the QPMT during an August 29, 2001 meeting, where the QPMT agreed that no action was appropriate. A brief decision document (MCBQ IRP Closeout Document No. 6) was signed by the QPMT on November 8, 2001.

A.5.43 CA-43—Building 3034 Accumulation Area (Site 78)

CA-43 was located between the RF&P Railroad and Potomac River on the Mainside of the MCBQ south of Potomac Avenue and immediately north of Building 3034. This 25-foot by 25-foot drum storage area was located on the outside of Building 3034 (Base carpenter shop). Palletized drums containing waste roofing material, solvents, and tar were placed on the asphalt pavement. One open-top drum of solvents was exposed during the RFA VSI. The drums containing roofing tar were leaking. Heavy stains were observed on the asphalt pavement.

The site is no longer used as an accumulation area. No drums were present at the site during a DTAWS site visit. No staining was evident. The site appeared to have been repaved. Based on the recollection of a Base employee, the drums and stained asphalt were removed between 1988 and 1989.

The site was closed out under the DTAWS phase of the IRP. A DTAWS investigation was conducted at the site during FY2000. The results of the DTAWS investigation were presented to the QPMT at a May 31, 2001 meeting, where the QPMT agreed that no action was appropriate. A brief decision document (MCBQ IRP Closeout Document No. 3) was signed by the QPMT on August 30, 2001.

A.5.44 CA-44—Building 2013 Accumulation Area No. 3 (Site 79)

CA-44 was located in the Mainside of the MCBQ to the north of Barnett Avenue west of Building 2013 approximately 30 feet south of CA-35. This 4-cubic foot containment area was a mobile metal unit containing

waste paint thinners, gasoline, and waste solvents. The wastes were generated from the maintenance of vehicles. The unit was located on a concrete surface and was covered when not in use.

The site is no longer used as an accumulation area. The accumulation area has been replaced by a new hazardous waste storage shed, Building 2097. No evidence of spills, leaks, or releases was observed during a DTAWS site visit.

The site was closed out under the DTAWS phase of the IRP. A DTAWS investigation was conducted at the site during FY2000. The results of the DTAWS investigation were presented to the QPMT at an April 10, 2001 meeting, where the QPMT agreed that no action was appropriate. A brief decision document (MCBQ IRP Closeout Document No. 2) was signed by the QPMT on July 10, 2001.

A.5.45 CA-45—Murphy Demolition Area Accumulation Area (Site 37)

CA-45 was located within the Murphy Demolition Area (L-14) in Training Area 8-A in the south-central portion of the MCBQ just north of MCB Route 3. Drums of waste oils, solvents, and mixtures of these materials were stored at the site. A visit to the site was not conducted during the RFA VSI. Base personnel indicated that there was reportedly extensive staining at the site.

During the DTAWS site visit, the site was no longer used as an accumulation area. There was no visible evidence of contamination.

The site was closed out under the DTAWS phase of the IRP. A DTAWS investigation was completed at the site in FY2000. The results of the DTAWS investigation were presented to the QPMT at a May 31, 2001 meeting, where the QPMT agreed that no action was appropriate. A brief decision document (MCBQ IRP Closeout Document No. 4) was signed by the QPMT on October 3, 2001.

A.5.46 CA-46—Building 24007 Accumulation Area No. 2

CA-46 was located south of MCB Route 3 in the Camp Barrett area of MCBQ within Training Area 7-B. This area was located in the vicinity of Building 24007. This unit was not observed during the RFA VSI. It reportedly managed wastes from the maintenance of track vehicles at Building 24007.

The site is no longer used as an accumulation area.

The site was closed out under the DTA phase of the IRP. A DTA investigation was conducted at the site during FY2000. The results of the DTA investigation were presented in DTA Report No. 10 (Tetra Tech, 2000d). The QPMT agreed that no action was appropriate during an August 29, 2001 meeting. The DTA Report and the signed signature page for the report serve as the brief decision document for the site.

A.5.47 CA-47—Building 24006 Accumulation Area (Site 80)

CA-47 was located south of MCB Route 3 in the Camp Barrett area of the MCBQ within Training Area 7-B. The site was located in the rear of Building 24006 opposite a storage shed. The accumulation area was assumed to be located within the fenced-in area surrounding Building 24006. Approximately 660 gpy of rifle bore cleaner and 20 gpy of waste lube oils were managed at the site. A visit to the site was not conducted during the RFA VSI.

During the DTAWS site visit, Safety Kleen recycling equipment was in use at the site. The site was active and being used for its intended purpose.

The site was initially closed out under the DTAWS phase of the IRP. A DTAWS investigation was conducted at the site during FY1998. The results of the DTAWS investigation were presented in DTAWS Report No. 1 (Tetra Tech, 2000f). The QPMT agreed to proceed to an FY2001 SSP investigation at the site. However, at a March 1, 2001 meeting, the QPMT agreed to defer investigation of the site to the RCRA program since the site was still active. Thus, no action under the IRP is required. DTAWS Report No. 1 (Tetra Tech, 2000f) and the signed signature page for the report serve as the brief decision document for the site.

A.5.48 CA-48—Building 24162 Accumulation Area (Site 81)

CA-48 was located north of MCB Route 3 in the Camp Barrett area of the MCBQ within Training Area 5-A. This area was located opposite the entrance of Building 24162. Approximately 110 gpy of waste lube oil and small quantities of kerosene from routine maintenance of the Camp Barrett Heating Plant were managed at the site. A visit to the site was not conducted during the RFA VSI.

During the 1994 field inventory, this site was an active waste oil drum marshaling area. Stains were observed on the cement pad at the site. During the DTAWS site visit, the site was no longer used as an accumulation area. The building floor drains were found to be connected to the sanitary sewer system (M-02).

The site was closed out under the DTAWS phase of the IRP. A DTAWS investigation was conducted during FY2002. The results of the DTAWS investigation were presented to the QPMT at an April 9, 2002 meeting, where the QPMT agreed that no action was appropriate. A brief decision document (MCBQ IRP Closeout Document No. 14) was signed by the QPMT on May 16, 2002.

A.5.49 CA-49—Building 5-9 Accumulation Area

CA-49 was located on MCB Route 1 in the central portion of the MCBQ on the boundary of Training Areas 8-B and 11-B. The site managed approximately 220 gpy of waste oils that were generated from Building 5-9. A visit to the site was not conducted during the RFA VSI.

The site is no longer used as an accumulation area and has been replaced by Building 27956, a new hazardous waste storage shelter.

The site was closed out under the DTA phase of the IRP. A DTA investigation was conducted during FY2002. The results of the DTA investigation were presented at a June 5, 2002 meeting, where the QPMT agreed that no action was warranted. A brief decision document (MCBQ IRP Closeout Document No. 23) was signed by the QPMT on July 18, 2002.

A.5.50 CA-50—TBS Gas Station Accumulation Area

CA-50 was located at the TBS Gas Station south of MCB Route 3 in the Camp Barrett Camp Barrett area of the MCBQ within Training Area 7-B. Approximately 360 gpy of waste oil were managed at the site. A visit to the site was not conducted during the RFA VSI.

The waste oil UST previously present at the site has been removed. The removal contractor indicated that there was no visible evidence of contamination. During the DTA site visit, the site was no longer used as an accumulation area.

The site was closed out under the DTA phase of the IRP. A DTA investigation was conducted during FY2002. The results of the DTA investigation were presented at a July 18, 2002 meeting, where the QPMT agreed that no action was appropriate. A brief decision document (MCBQ IRP Closeout Document No. 24) was signed by the QPMT on September 5, 2002.

A.5.51 CA-51—Mainside Gas Station Accumulation Area

CA-51 was located inside the Mainside Gas Station north of Epperson Road. The site reportedly managed 300 gpy of waste POL. A visit to the site was not conducted during the RFA VSI.

During the 1994 field inventory, all waste storage was located in secondary containment, and Safety Kleen recycling was in use at the site. During the DTA site visit, the site was no longer used as an accumulation area. The building was being used as a Tire Shop. No visible evidence of contamination was found.

The site was closed out under the DTA phase of the IRP. A DTA investigation was conducted during FY2001. The results of the DTA investigation were presented to the QPMT at an October 3, 2001 meeting, where the QPMT agreed that no action was appropriate. A brief decision document (MCBQ IRP Closeout Document No. 6) was signed by the QPMT on November 8, 2001.

A.6 Dry Paint Booths

This section presents brief site descriptions of the dry paint booth areas, as presented in the Phase II RFA (A.T. Kearney, 1989b).

A.6.1 D-01 and D-04—Dry Paint Booths

Dry paint booths are located at various maintenance shops across the MCBQ. D-01 is located on the east portion of the TSSU Building on MCB Route 1 in the central portion of MCBQ on the boundary of Training Areas 8-B and 11-B. D-04 is located in the south portion of Building 2103 on Rowell Road. During the RFA VSI, all paint booths at the MCBQ appeared to be well maintained, and the engineering/environmental controls were in good condition.

No visible evidence of contamination was found at the site during the DTA site visit.

D-01 was closed out under the DTA phase of the IRP. A DTA investigation was conducted at the site in FY2002. The results of the DTA investigation were presented to the QPMT at a June 5, 2002 meeting, where the QPMT agreed that no action was appropriate. A brief decision document (MCBQ IRP Closeout Document No. 23) was signed by the QPMT on July 18, 2002.

D-04 was also closed out under the DTA phase of the IRP. A DTA investigation was conducted at the site in FY2001. The results of the DTA investigation were presented to the QPMT at an August 29, 2001 meeting, where the QPMT agreed no action was appropriate. A brief decision document (MCBQ IRP Closeout Document No. 6) was signed by the QPMT on November 8, 2001.

A.6.2 D-02—Building 4 Dry Paint Booth

D-02 is located inside Building 4 (Auto Hobby Shop) within the Mainside of the MCBQ in the southeastern corner of the Base adjacent to the Potomac River. The site, which is located in the northeastern corner of the building, is approximately 15 feet long by 10 feet wide and is used for personal Base employee automobile paint finishing. There are no floor drains inside the paint booth. The unit has a dry filter system, and the exhaust for the system is located outside the building. Various types of materials, including primers, lacquers, enamels, thinners, and removers, are used in the paint booth.

During DTA and SSP site visits, the integrity of the paint booth was examined and found to be in good condition.

The site was closed out under the SSP phase of the IRP. A DTA investigation was completed for the site during FY1999. As noted in the DTA Report No. 6 (Tetra Tech, 2000b), the recommendation for the site was postponed until more information was available from SSP investigations performed at the Building 4 sites. An SSP investigation was conducted at the Building 4 sites during FY2001. Based on information presented in the FY2001 SSP Work Plan (Tetra Tech, 2001c), the QPMT agreed that no action was appropriate. A brief decision document (MCBQ IRP Closeout Document No. 12) was signed by the QPMT on November 7, 2001.

A.6.3 D-03—Building 2101 Dry Paint Booth

D-03 is located on the north interior corner of Building 2101 (HMX-1 hangar) on Rowell Road adjacent to Marine Corps Air Facility Turner Field in the Mainside of the MCBQ. In 1941 the site was added to the building and enclosed within a concrete block room. The 1-foot wide by 26-foot long paint booth uses a dry filter system. The exhaust duct for the system is located outside the building. A floor drain inside the unit is connected to a 6-inch drainpipe, which is attached to a sump (M-27).

During the DTA and SSP site visits, the integrity of the paint booth was sound. No evidence of contamination was observed.

The site was closed out under the DTA phase of the IRP. A DTA investigation was completed for the site during FY1999. The results of the DTA investigation were presented in DTA Report No. 6 (Tetra Tech, 2000b). The QPMT agreed that no action was appropriate. The DTA Report and the signed signature page for the report serve as the brief decision document.

A.6.4 D-05 and D-06—Building 2013 Dry Paint Booth Nos. 1 and 2

D-05 is located in the northeastern portion of Building 2013, which is the Motor Vehicle Maintenance Facility for approximately 800 vehicles located at the intersection of Barnett Avenue and Cole Street within the Mainside of MCBQ. D-06 is located in the southern portion of Building 2013. The sites are approximately 60 feet long by 20 feet wide and were installed in February 1985. D-05 was used only once as a dry paint booth (Geophex, 1992). Afterwards, the site was converted to an air compressor room. D-06 is used for repainting military owned vehicles (Geophex, 1992). The types of material used include organic-based primers, lacquers, enamels and enamel reducers, and thinners.

During a DTA site visit, three air compressors were situated on the concrete floor at D-05. Spillage from the compressor closest to the northwestern wall of the building was evident based on the presence of absorbent sand. A small floor drain, which is connected to the storm sewer system (M-01), was noted to be dry. D-06 was an active paint booth. Base personnel indicated that the site was used about three times per week, and no water was used during cleanup activities. Both units appeared to be in good condition; no cracks in the structures were observed.

The sites were closed out under the DTA phase of the IRP. DTA investigations were conducted at the sites during FY2000. The results of the DTA investigations were provided in DTA Report No. 8 (Tetra Tech, 2000c). The QPMT agreed that no action was appropriate. The DTA Report and the signed signature page for the report serve as the brief decision document for both sites.

A.7 Land-based Units

This section presents brief site descriptions of the land-based units, as presented in the Phase II RFA (A.T. Kearney, 1989b).

A.7.1 L-01—Pesticide Burial Area (Site 01)

The location of this area is approximately 200 feet southwest of Building 2427 near the intersection of Russell Road and MCB Route 1 in Training Area 5-B. This unit is the result of a one-time disposal operation that occurred in June 1974. Excess pesticides, approximately 278 liters (L) of liquid material (49.3 L of 15% Dieldrin and 228 L of 18.5% Kelthane) and 122 kilograms (kg) of solid material (65.4 kg of 98% Lead Arsenate, 22.6 kg of 95% Micosulfur, 11.3 kg of Paris Green, and 22.6 kg of 50% Captan), were buried in an earthen pit that was approximately 8 feet deep and 16 feet in diameter. The pit was backfilled with the excavated soils. During the RFA VSI, the site was completely indistinguishable from its surroundings. During the Confirmation Study (Radian, 1988), an organic phase was encountered in a soil boring installed at the site.

The site was closed out via the RI/FS phase of the IRP. As identified in MCBQ IRP Consensus Agreement No. 6, the investigation of this site was completed concurrently with the investigation of L-17, L-18, and M-29. The results of the RI were presented in the RI Report (Tetra Tech, 1998d). An interim removal action was performed at the site during the RI process. An NFA ROD was signed for the site (NAVFAC, 2000b). A round of confirmation sampling was conducted in FY2001, as defined in the ROD. The results of the confirmation sampling were presented to the QPMT at a March 7, 2002 meeting, where the QPMT agreed that no further monitoring or action was appropriate. A brief decision document (Confirmation Sampling Decision Document No. 1) was signed by the QPMT on May 16, 2002.

A.7.2 L-04—Old Batch Plant (Site 05)

The site is located within 200 feet (northeast) of Building 3218 near the intersection of Elrod Road and Route 636 within Training Area 3 on the Mainside of the MCBQ. Site operations began in the 1970s and by 1979 all transformers were removed and placed in Building 2141. For approximately 6 to 9 years, in open storage, unserviceable electrical transformers from the Electrical Shop were accumulated at the site. Some of the transformers contained 18 gallons of 100% PCB dielectric fluid. The remaining transformers contained only mineral oil. The transformers were stored on a concrete pad (formerly a concrete batch plant); oil stains were observed on the pad during the IAS site visit. Other site features include two drop inlets on the concrete pad and a separate drop inlet downgradient from the site. An oil/water separator located east of the pad, which was installed to prevent petroleum products from flowing into the Potomac River from spills at a nearly underground fuel storage area (L-10), was removed in 1986.

The site was closed out under the RI/FS phase of the IRP. As identified in MCBQ IRP Consensus Agreement No. 6, the investigation of this site was completed concurrently with the investigation of several associated sites (L-07, M-06, M-07, and M-08). The results of the RI were presented in the RI Report (Tetra Tech, 1998d). An interim soil removal action was performed at the sites during the RI stage, and an NFA ROD (NAVFAC, 2000a) was signed. The ROD indicated that confirmation sampling would be conducted to ensure that the previous removal action was adequate. The first round of confirmation sampling was completed in FY2001, and the associated results were presented at a March 7, 2002 meeting. During a March 27, 2002 conference all, the QPMT agreed that an additional round of monitoring was necessary. The second round of confirmation sampling was completed in August 2002, and the associated results were presented at the January 22, 2003 meeting. At a March 6, 2003 meeting, the QPMT decided to proceed to an EE/CA because it was assumed that residual sediment in the catch basins and drop inlets was contributing to contamination in a nearby drainage ditch, which eventually discharges to the Potomac River. The final EE/CA report (Tetra Tech, 2004b) was submitted to the QPMT on April 15, 2004. The Action Memorandum (EFACHES, 2004b) for the additional removal action was signed by the Navy on May 17, 2004. Another removal action and stream restoration (Shaw, 2005a) was completed from April to August 2005 to

mitigate residual sediment contamination in the catch basins and drop inlets. A second NFA ROD (NAVFAC, 2007a) was signed in July 2007.

A.7.3 L-04a to L-04k—Old Batch Plant Auxiliary Sites [Sites 82 (L-04a), 83 (L-04b), 84 (L-04c), 85 (L-04i), and 86 (L-04j)]

These sites are located in the southeastern portion of the Mainside within Training Area 3. The sites were identified as possible waste disposal areas based on an EPIC review of Base aerial photography (EPA, 1994). Site conditions in the March 1954 photograph generally resemble those of the 1953 photograph. Of interest were the newly cleared areas, which were accessed from the northern portion of the site. By May 1962 several probable waste disposal areas (L-04a through L-04d) were visible within the southern half of the site. One central access road tied the probable waste disposal areas to the main portion of the site. Two possible pits, areas of dark-toned staining, disturbed ground, and open storage of numerous small objects were also noted in 1962.

In April 1964, four of the six probable waste disposal areas (L-04a, L-04b, L-04e, L-04f) were active and contained mounds of light-toned material. Two areas (L-04c and L-04d) were inactive; their surfaces covered with vegetation. Two pits, medium-toned mounded material, and six rows of light-toned mounded material were visible near L-04f. Many of the objects formerly in open storage within the northern portion of the site were removed. Scattered light-toned cylindrical objects were observed across the ground surface, and an area of scattered possible waste materials was noted farther west.

Two of the probable waste disposal areas (L-04b, L-04d) visible in April 1964 were active in June 1969. Three new probable waste disposal areas (L-04g, L-04h, and L-04i) were added. One area, L-04l, contained a small pit. A new area of disturbed ground was visible west of Building 3237 in the northern portion of the site.

By November 1970, all probable waste disposal areas appeared inactive and were vegetated. A number of airplanes were parked adjacent to the disturbed ground.

Renewed activity was noted in December 1971. Areas L-04c, L-04i and L-04k contained possible pits; L-04i contained areas of light-toned liquid, possibly frozen. Two pits and four trenches (containing light-toned liquid) were visible south of L-04f. A new probable waste disposal area (L-04j) was visible in the southern portion of the site. Two other trenches were noted on either side of the across road north of the probable waste disposal areas. Probable drums, light-toned material, and medium-toned mounded material were visible in the open storage area in the northern portion of the site. A dark-toned stain extended westward from Building 3216.

By March 1981, one probable waste disposal area (L-04b) remained active. All other probable waste disposal areas were covered with vegetation. The noticeable change in the northern portion of the site was the construction of a building. A number of different materials were visible within open storage, but poor resolution of the film precluded identification of these materials. In October 1985, L-04b was revegetated. Mounded materials and open storage of earthen materials, debris, and square containers were visible in the northern part of the Old Batch Plant (L-04). All of these materials were removed by January 1993.

With the exception of L-04h, the sites were closed out under the DTAWS phase of the IRP. L-04h was closed out under the DTA phase of the IRP. DTA investigations were conducted at L-04d through L-04h and L-04k during FY1998, while DTAWS investigations were conducted at the remaining sites. The results of the DTA investigations for L-04d through L-04g and L-04k were provided in DTA Report No. 3 (Tetra Tech, 1998b). The QPMT agreed to proceed to DTAWS investigations at these sites. The DTAWS investigations for these sites were completed during FY1999. The results of the DTAWS investigations for all of the sites are provided in DTAWS Report No. 3 (Tetra Tech, 2000h). The QPMT agreed that no action was appropriate for all of the sites. The DTAWS Report and the signed signature page for the report serve as the brief decision document for the sites.

A.7.4 L-05—Recently Closed Landfill

The site is a 28-acre landfill located 300 yards north of the intersection of Interstate Route 95 and Russell Road within Training Area 6-C. From 1971 to 1983, the site was the official Base landfill used by all shops and

organizations under Permit #360. Trench and fill operations were performed at the unit and the initial operations utilized the front or southern part of the landfill with operations moving northward in later years.

Wastes disposed at the site include:

- Hazardous wastes: oil drums (some with fluids), gas cylinders, partially filled paint cans, drywall sealer, partially filled gasoline cans, auto batteries, engine oils, photographic and other unidentified chemicals, clean-up materials from a November 19, 1978 JP-4 spill and other spills, movie film, and magnetic tape. The following types and quantities of waste are known to have been disposed at the site:
 - From the paint shop: 27,000 gallons of paint, 16,000 gallons of paint thinner and cleaner, and 1,000 gallons of sludge from paint booths
 - From the Air Conditioning Shop: 7 gallons of sludge from viscosine, and 30 gallons of compressor oil
 - From Motor Transport and Maintenance Facility: 2,800 vehicle batteries
- Inert wastes: Ammunition crates on wooden pallets, gas masks, cleared brush, water heaters, tar, unserviceable steel helmets, liners, cartridge belts, canteens, pouches, boots, ceiling tiles, insulation (yellow fiberglass), drywall bed frames, mattresses, coaxial cables, tires, old meat, steel lockers, toilets, and scrap steel.

A number of intermittent seeps radiate from the landfill on the north, west, and east sides. During the RFA VSI, reddish discoloration of soils was reported in drainage channels along the southwest sides of the unit and in streams leading from this area towards the Chopawamsic Creek.

This site was deferred to the RCRA Program as a result of the Findings of Fact in the FFA (EPA, 1998). Thus, no action under the IRP is required.

A.7.5 L-06—Arsenic Burial Area (Site 17)

Although the exact location of this site is not known, the site is suspected to be in the general vicinity of the Old Batch Plant (L-04). The site was originally reported to be located south of the Old Batch Plant (L-04) and Building 3237 and east of the Correctional Facility (Building 3247) within Training Area 3. In 1970 the site was used for the one-time disposal of 27 30-gallon drums of an unknown material, which is suspected to have been water-soluble liquid sodium arsenite. The words "arsenic of lead" were reportedly stenciled on the sides of the drums, which were buried in a 10-foot deep trench and covered with soil to ground level.

The site was closed out under the RI/FS process of the IRP. As stated previously, the exact location of the burial area is not known. Three potential areas thought to be the location of the site were investigated during RI activities. Geophysical surveys, trenching activities, and sampling efforts were completed at each of the three suspected locations. However, the burial area was not found. The results of the RI were presented in the RI Report (Tetra Tech, 1998d). A no action ROD (NAVFAC, 2001) was signed for the site.

A.7.6 L-07—Aero Club (Site 18)

The Aero Club is located at the northern end of the airfield, which is bordered by the Potomac River to the southeast and northeast. No startup date is available for the site. This unit managed over 30 drums of waste oils, lubricants, and fuel. During the RFA VSI, extensive staining was noted on the soil surrounding the site.

The site was deferred to another regulatory program as a result of the Findings of Fact in the FFA (EPA, 1998). Thus, no action under the IRP is required.

A.7.7 L-08—Fire Training Area (Site 19)

The site is located on the southwest end of the Marine Corps Air Facility Turner Airfield, close to the Chopawamsic Creek, and east of the intersection of Cunningham Road and Bauer Road. The site consisted of a shallow pit, approximately 30 square feet, lined with asphalt material and surrounded by an 8-inch concrete berm with no

provision for drainage. The site was used for the training of crash rescue crews. No startup date is available for the site. JP-4 and JP-5 fuel was burned at the unit; degreasing solvents may also have been burned. Fires were extinguished with aqueous film-forming foam and water.

The site was deferred to the UST program following FFA negotiations. Thus, no action under the IRP is required.

A.7.8 L-09—Battery Acid Disposal Area

The site is located about 100 feet south of the CER Shop, Building 27054, along the southern side of the property fence within Training Area 8-B in the CER area of the MCBQ. The disposal area consisted of a 400 square foot area where disposal activities began in 1970 and ceased in May 1983. During the RFA VSI, bare patches of ground along and away from the fence line were noted. Waste (sulfuric acid electrolyte, lead sulfate, and lead) from approximately 75 to 100 lead-acid batteries per year were reportedly emptied onto the ground surface at this site. During the RFA VSI, it was concluded that no remedial action appeared to have been taken at this site. The grass and vegetation in the area were severely stressed. There was a distinct area about 15 to 20 feet wide with no growth.

During the 1994 field inventory, no visible evidence of contamination was found.

This site was deferred to another regulatory program as a result of the Findings of Fact in the FFA (EPA, 1998). Thus, no action under the IRP is warranted.

A.7.9 L-10—Underground Fuel Storage Area (Brown Field)

This 2-acre unit is located north of and adjacent to Route 636 west of the crossroads of Route 636 and Elrod Road within Training Area 2. The site consisted of an undefined area containing five USTs that contained residual quantities of JP-4 fuel and other POLs. The startup date of this unit is unknown. The tanks were abandoned in place in 1983. Two spills at the site were documented. The larger of the two occurred in 1978, and consisted of 82,000 gallons of JP-4 fuel. A 200-meter-diameter area around the storage tank was impacted by the spill, which was cleaned up. An unknown quantity of fuel reached the Potomac River. Up to three years after the incident, fuel was observed seeping from the ground, especially after rainfalls.

This site was deferred to another regulatory program as a result of the Findings of Fact in the FFA (EPA, 1998). Thus, no action under the IRP is warranted.

A.7.10 L-11—Building 3252 Temporary Waste Storage Area (Site 87)

The site is located east of Lejeune Field and Dunlap Circle in Mainside and is located between Range Road and Building 3252 (Base Maintenance). The area was surrounded by a fence on three sides and by a concrete apron on the fourth side. The date of start-up of the site is unknown. Used lead-acid batteries (on wooden pallets), empty freon containers, old refrigeration units, old pipes, discarded wooden pallets, old empty cylinders, and other unidentified metal units were stored at the site. The wastes were segregated by type and stored along an 8-foot fence on a graveled or grass covered surface. During the RFA VSI, a 40-square foot area, next to one of the nearby battery accumulation areas, was covered with absorbent material. Cracked battery casings were observed in the battery accumulation areas. The soils along the fence were stained. Also, there were stains in large areas up to 20 feet from the fence. Additionally, varsol sludge may have been poured onto the ground surface somewhere in the vicinity of the storage lot (NEESA, 1984).

The site is no longer used as an accumulation area. Minor soil staining was observed in the soil and gravel lot during the 1994 field inventory. During the DTAWS site visit, the site was used as a vehicle parking lot and as a storage space for supplies and small pieces of equipment for activities occurring within Building 3252. No waste cans, batteries, or drums were present.

The site was closed out under the DTAWS phase of the IRP. A DTAWS investigation was completed for the site during FY2000. The results of the DTAWS investigation were presented to the QPMT at a December 11, 2001 meeting, where the QPMT agreed to proceed to a supplemental DTAWS investigation. A supplemental DTAWS

investigation was completed for the site during FY2002. The results of the supplemental investigation were presented at a December 11, 2001 meeting, where the QPMT agreed that no action was appropriate. A brief decision document (MCBQ IRP Closeout Document No. 8) was signed by the QPMT on January 16, 2002.

A.7.11 L-12—New Burn Pit

This unit is located within the boundaries of APS-02C (Interim Burn Pit and Fill Area) and is approximately 250 feet northwest of the Aero Club on the eastern side of Runway 20 at Marine Corps Air Facility Turner Field. The site was installed in 1986 directly over the former location of a previous interim burn pit. The pit reportedly has never been used for fire training activities (A.T. Kearney, 1989a and 1989b). A concrete pad with a 6-inch berm surrounds the pit, which is approximately 45 feet in diameter. Although the original design for the unit included the installation of an oil/water separator, the separator was never installed, which is supposedly the reason why the pit was never used. Run-off from the site drains via a grate, located in the center of the pit, to two 100,000-gallon underground waste receiving tanks (Site TA-7, New Burn Pit Underground Tank No. 1). The waste receiving tanks, which were removed on March 9, 1993, also received run-off from Site L-15 (T-58 Engine Test Pad). During the RFA VSI, the grate/drain in the center of the burn pit was found to contain standing water from a rainfall event.

During the DTAWS and SSP site visits, there was no visible evidence of contamination at the site. The concrete parking apron surrounding the pit was in good condition. Several piles of construction rubble were present in the vicinity of the site. Standing water was observed at the pit. An odor of petroleum, which was noted during the 1994 field inventory, was not evident during the DTAWS and SSP site visits.

The site was closed out under the SSP phase of the IRP. A DTAWS investigation was conducted at the site during FY1998. The QPMT agreed that the site would proceed to an SSP investigation prior to completion of the DTAWS report. An SSP investigation was conducted at the site during FY2000. The results of the DTAWS and SSP investigations were provided in SSP Report No. 3 (Tetra Tech, 2001d) and further discussed at a June 6, 2002 meeting, where the QPMT agreed that no action was appropriate. A brief decision document (MCBQ IRP Closeout Document No. 20) was signed by the QPMT on September 4, 2002.

A.7.12 L-13—Open Burn/Open Detonation Area

The site is located in the Camp Barrett Demo Area within Training Area 5-A approximately one-half mile south of the Popping Furnace (M-5). The site consists of a series of earthen pits and trenches and is accessible by an unnamed dirt road; this road intersects MCB Route 2 and is located approximately 0.6 miles southwest of the intersection of MCB Route 2 and MCB Route 1. The site is located on a raised fill area and extends approximately 400 feet in diameter. The startup date was approximately 1975 and operations ceased in late 1988, as a result of a Compliance Evaluation Inspection. Thermal treatment of ordnance and explosive materials occurred at the site. Wood was placed in trenches, soaked with diesel fuel oil, covered with ammunition, and ignited. Waste explosives were detonated in the pits and energetic wastes were open burned in the trenches. The pits used for open detonation ranged in size from 5 feet in radius and 5 feet deep to 10 feet in radius and 12 feet deep. Such pits increased in size with usage, and after a pit attained a certain size, the existing pit was backfilled for reuse. The trenches used for open burning were approximately 35 to 40 feet long, 10 feet wide and 5 feet deep. Trenches remained in place. Waste materials were transported to the Base Sanitary Landfill. During the RFA VSI, the bottom of one of the trenches was observed to be soaked, and a white sheen (possibly diesel oil) was present.

During the 1994 field inventory, all loose debris had been removed from the site. The site was covered with grass.

This site was deferred to another regulatory program as a result of the Findings of Fact in the FFA (EPA, 1998). Thus, no action under the IRP is necessary.

A.7.13 L-14—Murphy Demolition Area

The site is located in the south central portion of the Base in Training Area 8-A and is accessible by MCB Route 3. The unit began operations in 1957 for the purpose of training Marines in the use of standard military explosives

and ordnance, such as trinitrotoluene and Composition 4 explosives. To simulate napalm detonations, drums of waste oil and solvents were also ignited. During its most active period, the site was used weekly; up to 50 caliber ordnance was detonated. The site consists of one large unlined pit approximately 300 feet long by 200 feet wide. The pit underwent rehabilitation from 1991 to 1994 (Geophex, 1992). During this rehabilitation, a lining may have been placed in the pit.

During the DTA site visit, the site was actively used for training exercises at a frequency of approximately one exercise per month. Most activities are ordnance exercises. However, one exercise includes igniting approximately 3 gallons of unleaded gasoline. No waste oils or solvents have been burned at the site since the late 1980s. Metal and wood debris was scattered throughout the pit and along the sides of the access road. An abandoned metal tank was located north of the pit.

The site was deferred to another regulatory program during the DTAWS phase of the IRP. A DTA investigation was completed for the site during FY1999. The results of the DTA investigation were presented in DTA Report No. 7 (Tetra Tech, 2000a). The QPMT agreed to proceed with a DTAWS investigation, which was completed during FY2001. The results of the DTAWS investigation were presented at a May 31, 2001 meeting, where the QPMT agreed to defer the site to another program. Thus, no action under the IRP is warranted. A brief decision document (MCBQ IRP Deferral Document No. 2) was signed by the QPMT on December 11, 2001.

A.7.14 L-15–T-58 Engine Test Pad

This unit is located approximately 300 feet north of the Aero Club (L-7) and 150 feet east of the New Burn Pit (L-12) 400 feet from the Potomac River. No start up date is available for the site. The concrete pad, which was constructed around 1987, is approximately 100 feet long by 60 feet wide and is surrounded on three sides by 8-inch diking with an 8-inch wide berm. A concrete sump is located in the southern corner of the pad. The sump drains to an underground waste accumulation tank (Tank TA-7). During the RFA VSI, sandblast residues on bare ground were reported within a 300-square foot area outside the northwest edge of the unit. This area was devoid of vegetation and the residue layer was at least an inch thick at the center.

During the DTA site visit, no stains or visible evidence of contamination were apparent at the site.

The site was closed out under the DTA phase of the IRP. A DTA investigation was conducted during FY2001. The results of the DTA investigation were presented to the QPMT at an August 29, 2001 meeting, where the QPMT agreed that no action was appropriate. A brief decision document (MCBQ IRP Closeout Document No. 6) was signed by the QPMT on November 8, 2001.

A.7.15 L-16—Quantico Sanitary Landfill

This 10-acre unit is located off MCB Route 2 northwest of Camp Barrett Demo Area within Training Area 8-B. The landfill has a liner made of unknown material, a leachate collection system, and a system of ground-water monitoring wells. Site operations began in 1983. Three times in 1984, the site was rated unsatisfactory for open burning and leachate violations. Since then, it has received satisfactory ratings. A June 1984 inspection found that fats and oils from the base kitchen were placed on the outer edges of the landfill and entered the water diversion ditch rather than the leachate system. A January 1986 inspection noted grease ponding in the northwest area of the unit. The results for a monitoring well were deemed insufficient and unreliable.

Currently, the landfill is inactive.

This site was deferred to another regulatory program as a result of the Findings of Fact in the FFA (EPA, 1998). Thus, no action under the IRP is warranted.

A.7.16 L-17—Building 2427 Burn Area

This unit is located approximately 50 feet east of the Pesticide Burial Area (L-01) and southwest of Building 2427 within Training Area 5-B. The location of this site is in the vicinity of existing Building 27007 (Log Cabin). No startup or closure dates are available. The unit, which was used for open burning, was approximately 80 feet long

by 20 feet wide. The specific wastes burned at the site are unknown. Ash residue was observed at the site during the RFA VSI.

During the 1994 field inventory, no evidence of contamination was found at the site.

The site was closed out under the RI/FS phase of the IRP. As identified in MCBQ IRP Consensus Agreement No. 6, the investigation of this site was completed concurrently with the investigation of L-01 (Pesticide Burial Area), L-18, and M-29. The results of the RI were presented in the RI Report (Tetra Tech, 1998d). An interim removal action was performed at the site during the RI stage. An NFA ROD (NAVFAC, 2000b) was signed. One round of confirmation sampling, as discussed in the ROD, was performed during FY2001. The results of the confirmation sampling were presented at a March 7, 2002 meeting, where the QPMT agreed that no further monitoring and action was necessary. A brief decision document (Confirmation Sampling Decision Document No. 1) was signed by the QPMT on May 16, 2002.

A.7.17 L-18—Building 2427 Disposal Area

This unit is located 80 to 100 feet west of the Pesticide Burial Area (L-01) in wooded area within Training Area 5-B. The location of this site is in the vicinity of existing Building 27007 (Log Cabin). No startup or closure dates are available. The startup date for the unit is unavailable. The disposal area was over 2,000 square feet in size and wastes were placed haphazardly amongst the vegetation. One corroded metal tank shell, one drum filled with unknown liquid, two empty drums, an old cooking grill, scrap metal, and some pieces of office equipment were disposed at the site.

During the 1994 field inventory, no visible evidence of contamination was found at the site.

The site was closed out under the RI/FS phase of the IRP. As identified in MCBQ IRP Consensus Agreement No. 6, the investigation of this site was completed concurrently with the investigation of L-01 (Pesticide Burial Area), L-17, and M-29. The results of the RI were presented in the RI Report (Tetra Tech, 1998d). An interim removal action was performed at the site during the RI stage. An NFA ROD (NAVFAC, 2000b) was signed. One round of confirmation sampling, as discussed in the ROD, was performed during FY2001. The results of the confirmation sampling were presented at a March 7, 2002 meeting, where the QPMT agreed that no further monitoring and action was necessary. A brief decision document (Confirmation Sampling Decision Document No. 1) was signed by the QPMT on May 16, 2002.

A.7.18 L-19—Quantico Sanitary Landfill Burn Area

This unit is located north of the Quantico Sanitary Landfill (L-16) by MCB Route 2 within Training Area 8-B. The burn permit for this site was first applied for on May 14, 1986; however, open burning activities were conducted at the site prior to this date. Wastes burned at the site include brush, tree trimmings, yard and garden trimmings, and similar land-clearing refuse and clear-burning waste from construction and demolition operations. Ash and other burn residues were observed at the site during the RFA VSI.

No evidence of contamination was found at the site during the 1994 field inventory.

This site was deferred to another regulatory program as a result of the Findings of Fact in the FFA (EPA, 1998). Thus, no action under the IRP is warranted.

A.7.19 L-20—Quantico Asbestos Burial Area

This one-third to one-half acre lined unit is located along the western edge of the Quantico Sanitary Landfill (L-16) and south of the Quantico Sanitary Burn Area (L-19) within Training Area 8-B. Site operation began around 1983. Small quantities of asbestos that were generated at the Base were disposed at the site. The asbestos was double-bagged in plastic bags and buried. No releases were identified at the site during the RFA VSI.

During the 1994 field inventory, the disposal area was marked with signs and the site was capped. There was no visible evidence of contamination.

This site was deferred to another regulatory program as a result of the Findings of Fact in the FFA (EPA, 1998). Thus, no action under the IRP is required.

A.7.20 L-21—Dihydrate Burial Area (Site 03)

This unit is located 100 feet south of Building 27002 (Heavy Equipment Garage) at the Guadalcanal Maintenance Area on the edge of a wooded area within Training Area 8-B. In May 1977, 226 kilograms of a powdery substance, labeled "calcium dihydrate" (perhaps calcium hydroxide), was disposed in plastic bags inside cardboard drums. During the RFA VSI, no releases were reported at the site.

During the 1994 field inventory, there was no evidence of contamination found at the site.

The site was closed out under the DTA phase of the IRP. A DTA investigation was conducted during FY2002. The results of the DTA investigation were presented to the QPMT at a July 18, 2002 meeting, where the QPMT agreed that no action was appropriate. A brief decision document (MCBQ IRP Closeout Document No. 24) was signed by the QPMT on September 5, 2002.

A.7.21 L-22—Asbestos Burial Area (Site 02)

This site was reportedly located between Building 27002 and MCB Route 4 adjacent to MCB Route 1 within Training Area 8-B. However, the exact location of the site is not known. The unit was reportedly a 10-foot deep, 15-foot wide, 40-foot long trench, which was used for the one-time disposal of 68 kilograms of asbestos in July 1976. The asbestos was from several welding shops at MCBQ. The asbestos was reportedly placed in plastic bags and cardboard and metal boxes, along with construction debris, including steel, wood, concrete and wire rope. Afterwards, the trench was backfilled with soil.

The site was deferred to another regulatory program after an interim removal action was conducted under the IRP. An SSP investigation was conducted at the site during FY2000. A geophysical survey was completed at the site during the SSP investigation. An anomaly, which was thought to correspond to the dimensions of the burial area, was identified. Trenching activities were conducted at the anomaly to determine if the area corresponded to the asbestos burial area. Although spent shell casing and burned ordnance were found at the site, no asbestos-containing material was encountered. The results of the SSP investigation were provided in SSP Report No. 3 (Tetra Tech, 2001d). At a November 11, 2000 meeting, the QPMT agreed that the site should proceed to an interim removal action to address the ordnance. The EE/CA report was finalized for the site in 2002. The interim removal action was initiated in December 2002 and ended in June 2003. Because the site is located within an active range (i.e., the Guadalcanal Area), the QPMT agreed to defer the site to regular range management practices (MCBQ IRP Deferral Document No. 6). Thus, no action under the IRP is warranted.

A.7.22 L-23—Camp Upshur Disposal Area (Site 10)

This 3-acre unit is located south of Cedar Run Bridge and west of Camp Upshur Road within Training Area 17-A. The unit began operations in 1950 and closed in 1972. Approximately 280 tons per year of domestic refuse and construction debris were disposed at the site. Initially, operations consisted of burning the wastes and covering the remains. Waste motor oil and solvents, paper, and other combustibles were also disposed at the site. Burning activities were halted in 1969, at which time wastes were disposed in trenches and covered with soil. During the RFA VSI, ash residue from open burning activities was observed in the soils at the site.

During the SSP site visit, the site was overgrown with vegetation, contained piles of construction rubble and metal debris, and was characterized by disturbed terrain. Surface debris was removed from the site during the SSP investigation. Site boundaries were not identifiable during the SSP investigation. An area containing spent shells was noted along the center of the northwestern border of the site at the base of a slope. A make-shift fox hole, covered with a piece of sheet metal and foliage, was also observed near the area of spent cartridge casings, confirming that the area was used for training purposes.

The site was closed out under the EE/CA phase of the IRP. An SSP investigation was conducted at the site during FY1999. The results of the SSP investigation were presented in SSP Report No. 2 (Tetra Tech, 2001a) and further

discussed at a June 6, 2002 meeting, where the QPMT agreed to proceed to a supplemental SSP investigation. A supplemental SSP was conducted at the site in FY2002. The results of supplemental SSP investigation were presented to the QPMT at a June 26, 2003 meeting, where the QPMT agreed to proceed to an interim removal action. The final EE/CA Report (Tetra Tech, 2005c) was submitted to the QPMT on April 1, 2005, and the associated Action Memorandum (NAVFAC, 2005b) was signed on May 25, 2005. In 2005, a removal action was completed at the site. A brief decision document (MCBQ IRP Closeout Document No. 37), which is included in the Contractor Closeout Report for Site Remediation (Shaw, 2007d), was signed by the QPMT on June 25, 2007. A multiple-site ROD (NAVFAC, 2008), describing the need for NFA following removal action activities at Sites 8, 9, 10, 21, 32, 33, 34, and 98, was signed by MCBQ in August 2008 and by EPA in September 2008.

A.7.23 L-24—Camp Barrett Disposal Area (Site 08)

This 5-acre wooded unit is located near MCB Route 2 west of the Barrett Demo Area within Training Area 5-A in the Guadalcanal Area of MCBQ. Site operations began in 1958 and ceased in 1972. The site was reportedly used for the disposal of domestic refuse, construction debris, waste oil, and solvents from the barracks, dining halls, and motor pools at Camp Barrett. Approximately 560 tons of domestic refuse and construction debris per year were disposed at the site. During the 1960s, the Camp Fire Department reportedly burned trash at the site. This open burning occurred about three times per week. Waste motor pool oil and solvents, paper, and other combustibles were consumed. The remaining unburned trash and noncombustibles were bulldozed into trenches and covered (NEESA, 1984). During the RFA VSI, construction debris, molds for road asphalt, piles of scrap metal, and an old empty galvanized steel water heater were observed at the site. Approximately 500 yards to the east along an old road, over 20 corroded drums were found in the woods lying on their sides among concrete rubble. No releases were observed. However, ash residue from previous burning activities was noted to be present in the soil.

During the SSP site visit, some areas that may be characterized as disturbed terrain were observed at the site. Site boundaries were not identifiable. Debris, including concrete, drums, and miscellaneous metal, was evident across much of the site. The surface debris was removed from the site during the SSP investigation.

The site was closed out under the EE/CA phase of the IRP. An SSP investigation was conducted at the site during FY1999. The results of the SSP investigation are provided in SSP Report No. 2 (Tetra Tech, 2001a). As discussed in a December 7, 2001 conference call, the QPMT agreed to proceed to an RI. However, at a March 6, 2003 QPMT meeting, the QPMT decided to proceed to an interim removal action. The results of an EE/CA were presented to EPA Technical Support at an April 29, 2004 meeting. The EE/CA report (Tetra Tech, 2004d) was finalized, and the Action Memorandum (NAVFAC, 2006) was signed on April 3, 2006. In 2006, a removal action was completed at the site. A brief decision document (MCBQ IRP Closeout Document No. 40), which is included in the Contractor Closeout Report for Site Remediation (Shaw, 2007a), was signed by the QPMT on October 17, 2007. A multiple-site ROD (NAVFAC, 2008), describing the need for NFA following removal action activities at Sites 8, 9, 10, 21, 32, 33, 34, and 98, was signed by MCBQ in August 2008 and by EPA in September 2008.

A.7.24 L-25—Camp Goettge

The site is located on the western edge of the Base in the vicinity of Dorrells Run and is accessible by MCB Route 3. Camp Goettge is located within TA-14 and just north of TA-13 in the Guadalcanal Area of the MCBQ. No startup date is available for the site, which has been abandoned since the late 1960s. All buildings at the camp were demolished. The approximate size of the camp is 2,500 feet by 1,200 feet.

During the DTA site visit, there did not appear to be any site-wide contamination or visible evidence of past or present waste disposal activities.

The site was closed out under the DTA phase of the IRP. A DTA investigation was conducted during FY2002. The results of the DTA investigation were presented at a July 18, 2002 meeting, where the QPMT agreed that no action was appropriate. A brief decision document (MCBQ IRP Closeout Document No. 24) was signed by the QPMT on September 5, 2002.

A.7.25 L-26—Camp Goettge South Disposal Area (Site 26)

This area (also referred to as APS-20) is a 5-acre disposal area located west of the unnamed access road, which serves at the southwest entrance to Camp Goettge (L-25) by MCB Route 3 within TA-14. The startup date of the site is not available. Unauthorized dumping may have occurred at the site since Camp Goettge reportedly never had a disposal area within its boundaries. Piles of concrete blocks, house construction debris, used tiles, and scrap metal are scattered throughout the area. The site was also known as the Camp Goettge Motor Facility. Site activities for the motor facility included parking, maintenance, and fueling of vehicles.

During the DTAWS site visit, the site was inactive. The disposal area, although surrounded by trees, is relatively bare except for short grasses and shrubs.

The site was closed out under the DTAWS phase of the IRP. A DTAWS investigation was conducted at the site during FY1998. The results of the DTAWS investigation were presented in DTAWS Report No. 2 (Tetra Tech, 2000g). The QPMT agreed that no action was appropriate. The DTA Report and the signed signature page serves as the brief decision document for the site.

A.7.26 L-27—Camp Goettge Disposal Area (Site 09)

This unit is located west of Goettge Road in the Guadalcanal Area of the MCBQ. This 2-acre site is located at the north end of the now-abandoned Camp Goettge. The unit operated from 1950 to 1960. Approximately 140 tons per year of domestic refuse, construction and demolition debris, waste oils, solvents, paper, other combustibles, and noncombustibles were reportedly disposed at the site. During the period of use, the trash was reportedly burned by Camp Fire Department personnel. The open burning occurred about three times per week. The unburned trash and non-combustibles were bulldozed into trenches and covered with soil. Ash residue from previous burning activities was noted in the soil at the site during the IAS (NEESA, 1984).

During the SSP site visit, the site was covered with natural vegetation and consisted of wooded land with some small trenches, numerous 55-gallon drums, and metal and miscellaneous debris. Dead or discolored vegetation was not observed at the site.

The site was closed out under the EE/CA phase of the IRP. An SSP investigation was conducted at the site during FY1998. The results of the SSP were presented at a June 5, 2002 meeting, where the QPMT agreed to proceed to an interim removal action. The EE/CA report (Tetra Tech, 2004e) was finalized, and the Action Memorandum (NAVFAC, 2004) was signed on May 26, 2006. In 2006/2007, a removal action was completed at the site. A brief decision document (MCBQ IRP Closeout Document No. 41), which is included in the Contractor Closeout for Site Remediation (Shaw, 2007e), was signed by the QPMT on October 17, 2007. A multiple-site ROD (NAVFAC, 2008), describing the need for NFA following removal action activities at Sites 8, 9, 10, 21, 32, 33, 34, and 98, was signed by MCBQ in August 2008 and by EPA in September 2008.

A.7.27 L-28—Air Station Disposal Area (Site 15)

This unit is located approximately 800 feet northeast of Larson's Gym (Building 2112) close to the banks of Chopawamsic Creek. TP-45 (Old Brown Field STP) is located approximately 45 feet south of L-28 and 3,000 feet off the intersection of Bauer Road and Chopawamsic Creek. Abrahams Creek (and a marsh area) borders the site to the west and the RF&P railroad tracks lie to the east. The site is a one-acre inactive landfill, which opened in 1942 and operated until sometime between 1947 and 1952. The unit managed trash, solid materials, and discarded aircraft parts from repair shops formerly located in Building 2121. No solvents, greases, fuels, paint sludge, oils, or other liquid wastes were disposed at the site (A.T. Kearney, 1989a and 1989b). No records of when the disposal area was filled in are available.

During the DTAWS and SSP site visits, a parking lot covered most of the site, which is used to access a nearby boat launch.

The site was closed out under the SSP phase of the IRP. A DTAWS investigation was conducted at the site during FY1998. The QPMT agreed that the site would proceed to an SSP investigation prior to the completion of a DTAWS

report. An SSP investigation was conducted at the site during FY2000. The results of the SSP and DTAWS investigations were presented in SSP Report No. 3 (Tetra Tech, 2001d) and further discussed at a June 6, 2002 meeting, where the QPMT agreed that no action was appropriate. A brief decision document (MCBQ IRP Closeout Document No. 18) was signed by the QPMT on September 9, 2002.

A.7.28 L-29—Rifle Range Disposal Area (Site 11)

This unit is located in the Guadalcanal Area of the MCBQ approximately 600 feet northeast of the East Gate of the Federal Bureau of Investigation (FBI) Academy along both sides of MCB Route 4 within Training Area 8-B. The site is a half-acre unlined disposal area, which operated from 1960 to 1972. Approximately 1.5 tons of waste per year, consisting of mess hall and office trash from the Rifle Range Area, were disposed in a trench. The waste was burned and covered with soil daily until 1970, when open burning activities ceased. After 1970, wastes were placed in pits and covered. No hazardous materials were reportedly disposed at the site. However, it is possible that the unit also received sludges generated from the Rifle Range STP (TP-48), when the STP was active (A. T. Kearney, 1989a and 1989b).

During the SSP site visit, various buried, rusted drums, and miscellaneous construction rubble (such as asphalt, metal piping cinder block, and rebar) were observed to be present throughout the site. Most of the site was overgrown with grass and low brush.

The site was closed out under the SSP phase of the IRP. An SSP investigation was conducted at the site during FY2000. The results of the SSP investigation were presented in SSP Report No. 3 (Tetra Tech, 2001d) and further discussed at a June 6, 2002 meeting, where the QPMT agreed that no action was appropriate. A brief decision document (MCBQ IRP Closeout Document No. 17) was signed by the QPMT on September 9, 2002.

A.7.29 L-31—Training Area 3 Disposal Area (Site 53)

This disposal area is located in TA-3 in the southeast portion of the MCBQ next to an unnamed access road. The startup date is estimated to be 1984. Driftwood, lumber, and household wastes were disposed at the site. Approximately 12 closed-top containers with residues of methyl ethyl ketone and other paint-related materials were observed at the site during the RFA VSI. An empty closed-top 55-gallon drum that once contained lube oil was also found at the site.

During the 1994 field inventory, construction debris was observed throughout the site. No visible evidence of contamination was apparent.

The site was closed out under the DTAWS phase of the IRP. A DTAWS investigation was conducted at the site during FY2001. The results of the DTAWS investigation were presented at a June 5, 2002 meeting, where the QPMT agreed that no action was appropriate. A brief decision document (MCBQ IRP Closeout Document No. 16) was signed by the QPMT on June 5, 2002.

A.7.30 L-32—1920s Landfill (Site 14)

This unit is located between Little Creek and Fuller Road at the Base golf course's 10th green. The unit operated between 1917 and 1920. Base garbage and trash were burned at the site. There are no records available indicating that hazardous waste was disposed at the site. The landfill was reportedly closed because it was clogging the creek (NEESA, 1984).

During DTAWS site visits, the only visible evidence of disposal activities consisted of debris that was observed along the landfill's edges near Little Creek.

The site was closed out under the DTAWS phase of the IRP. A DTAWS investigation was conducted at the site during FY1998. The results of the DTAWS investigation were presented to the QPMT at a December 11, 2001 meeting, where the QPMT agreed to proceed to a supplemental DTAWS investigation. A supplemental DTAWS investigation was conducted for the site during FY2002. The results of the supplemental investigation were

presented at a December 11, 2001 meeting, where the QPMT agreed that no action was appropriate. A brief decision document (MCBQ IRP Closeout Document No. 8) was signed by the QPMT on January 16, 2002.

A.7.31 L-33—Gravel Pit (Site 12)

The half-acre unit is located 800 feet north of Building 3248 along Route 636 within Training Area 3 and 500 feet south of the former ammunition unloading platform facility, Building 3257. This unit reportedly treated wastes from the mid-1950s to the mid-1960s. Approximately 100 gallons per month of waste oils and fuels, received from aircraft rework facilities formerly located at the Marine Corps Air Facility, were burned at the site. The unit was unlined and ash residue was reportedly observed in the soils.

During the SSP site visit, the site boundaries were not identifiable. Numerous railroad ties were located in the northern portion of the site. A small waste pile, containing scrap steel, was identified in the general area of the gravel pit; however, no evidence of contamination was found. Concrete rubble was observed in the central portion of the site. Miscellaneous metal debris exists throughout the site. The southern portion of the site was being used for training purposes; a rope ladder was observed on a small sand bluff. Marker tape was also found throughout the area, indicating that the area was used as an obstacle course.

The site was closed out under the SSP phase of the IRP. An SSP investigation was conducted at the site during FY1999. The results of the SSP investigation were presented in SSP Report No. 2 (Tetra Tech, 2001a). The QPMT agreed to proceed with a supplemental SSP investigation, which was conducted in FY2002. The results of the supplemental investigation were presented at a March 7, 2002 meeting, where the QPMT agreed that no action was appropriate. A brief decision document (MCBQ IRP Closeout Document No. 13) was signed by the QPMT on March 7, 2002.

A.7.32 L-34—Building 27002 Disposal Yard (Site 88)

The site is located immediately south of Building 27002 and the Dihydrate Burial Area (L-21) within Training Area 8-B. The site was a 2- to 3-acre temporary disposal yard underlain with fill material and surrounded by woods. During the RFA VSI, four empty metal tanks ranging in size from 200 to 500 gallons and three empty rusted drums were observed at the site. The site also contained scrap metal and an approximately one-third acre area of dead vegetation. Clearing activities, where debris was being pushed closer to a nearby drainage channel, were being conducted in the yard at the time of the RFA VSI. Dead vegetation resulted from runoff from a stockpile of de-icing salt stored upgradient of the yard.

During a DTAWS site visit, the disposal yard was observed to be active and the de-icing salt was stored near the site. The disposal yard was covered with gravel. Several bulldozers, gravel piles, and pieces of scrap metals were observed on top of the disposal yard. A marshy area was located to the south of the site.

The site was closed out under the DTAWS phase of the IRP. A DTAWS investigation was conducted at the site during FY2000. The results of the DTAWS investigation were presented to the QPMT at a July 10, 2001 meeting, where the QPMT agreed that no action was appropriate. A brief decision document (MCBQ IRP Closeout Document No. 3) was signed by the QPMT on August 30, 2001.

A.7.33 L-35—Building 27002 Disposal Trench

This earthen trench is located east of Building 27002 Disposal Yard (L-34) and southeast of and adjacent to the Building 27002 Temporary Storage Area (L-36) within Training Area 8-B. During the RFA VSI, the disposal trench was approximately 120 feet long, 15 feet wide, and 10 feet deep and contained scrap metal, dead vegetation, spare tires, and a rusted tank turret. No evidence of any past releases was observed.

During the DTAWS site visit, the disposal trench was found to have been completely backfilled to grade. Semi-crushed metal dumpsters were located around the former trench. Tires, scrap metal, piping, and old tank track, and municipal trash were observed scattered on the ground surface.

The site was closed out under the DTAWS phase of the IRP. A DTAWS investigation was conducted at the site during FY2000. The results of the DTAWS investigation were presented to the QPMT at a July 10, 2001 meeting, where the QPMT agreed that no action was appropriate. A brief decision document (MCBQ IRP Closeout Document No. 3) was signed by the QPMT on August 30, 2001.

A.7.34 L-36—Building 27002 Temporary Storage Area

This site is located between the Building 27002 Disposal Trench (L-35) and the Disposal Yard (L-34) within Training Area 8-B. The site is approximately 2 acres in size and is underlain by fill material. Reportedly, construction debris, consisting of concrete abutments and a large gravel pile, has accumulated at the site since April 1988 (A. T. Kearney, 1989a and 1989b). During the RFA VSI, a small amount of the gravel appeared to be stained (i.e., it was visibly darker than the surrounding gravel and had a creosote odor).

During the DTAWS investigation, the concrete abutments and gravel were still present at the site. The storage area appeared to be relatively undisturbed, except for the addition of several smaller gravel piles in the northeastern corner of the site.

The site was closed out under the DTAWS phase of the IRP. A DTAWS investigation was conducted at the site during FY2000. The results of the DTAWS investigation were presented to the QPMT at a July 10, 2001 meeting, where the QPMT agreed that no action was appropriate. A brief decision document (MCBQ IRP Closeout Document No. 3) was signed by the QPMT on August 30, 2001.

A.7.35 L-37—Former Rifle Range (Site 20)

The site is situated in a moderately incised valley west of Lejeune Hall on the Mainside of the MCBQ. The area covers approximately 30 acres and lies immediately north of Lejeune Hall's ancillary parking lot near Catlin Avenue. The site consists of several firing ranges (including pistol, rifle, and skeet ranges) and a borrow pit. Although the ranges are no longer active, lead projectiles were present in the berms and discarded skeet was observed on the ground surface; natural hillsides at the site were used as berms. Ranges A through F were used as the primary pistol and rifle training area from the mid-1930s through the mid-1960s.

The site was closed out under the RI/FS phase of the IRP. The results of the RI are presented in the RI Report (Tetra Tech, 2007a). At a November 29, 2001 meeting during comment resolution on the draft final RI Report, the QPMT agreed to postpone RI activities and proceed to an interim removal action. The removal action was conducted in two phases. Phase I consisted of Ranges A through F, and Phase II consisted of the unnamed range and borrow pit located near Russell Road. The final EE/CA Report for Phase I (Tetra Tech, 2003b) was submitted to the QPMT on October 8, 2003, and the associated Action Memorandum (EFACHES, 2003) was signed by the Navy on December 23, 2004. The final EE/CA report for Phase II (Tetra Tech, 2004c) was submitted to the QPMT on August 20, 2004, and the associated Action Memorandum (EFACHES, 2004c) was signed by the Navy on July 24, 2004. Removal action activities were documented in the Contractor Closeout Reports (Field Support Services, Inc./Shaw Environmental and Infrastructure, Inc., 2005a and 2005b). A Post-Interim Removal Action Report (Tetra Tech, 2007b) was finalized for the site, and an NFA ROD (NAVFAC, 2007b) was signed in by MCBQ in September 2007 and EPA in October 2007.

A.8 Miscellaneous SWMUs

This section presents brief site descriptions of the miscellaneous SWMUs, as presented in the Phase II RFA (A. T. Kearney, 1989b).

A.8.1 M-03—Building 24006 Rifle Bore Cleaning Area (Site 31)

M-03 is located on the east side of Building 24006 to the north of MCB Route 3 in the Camp Barrett area within Training Area 7-B. This unit is an approximately 1,800 square-foot area, where rifle bores and other rifle parts are cleaned and dried. No startup date is available. Wastes are discharged directly onto the ground surface when rifle parts are placed on drying racks on dip tanks. During the RFA VSI, a dumpster (M-27) containing contaminated rags was present at the site. The ground surface was heavily stained with concentrated areas of staining underneath the dip tanks.

During an SSP site visit, the site was active. Safety Kleen recycling equipment was used at the site.

The site was deferred to another regulatory program during the SSP phase of the IRP. A DTAWS investigation was conducted at the site during FY1998. The results of the DTAWS investigation were presented in DTAWS Report No. 1 (Tetra Tech, 2000f). The QPMT agreed to proceed to an SSP investigation. During the planning stages for an FY2001 SSP investigation, the site was determined to be active. During an April 10, 2001 meeting, the QPMT agreed to defer the site to the RCRA program. Thus, no action under the IRP is required. DTAWS Report No. 1 and the signed signature page for the report serve as the brief decision document for the site.

A.8.2 M-04—TBS Gas Station Battery Draining Pit

M-04 is located to the west of MCB Route 3 in the Camp Barrett area within Training Area 7-B. The site consists of an earthen pit, approximately 5 feet in diameter and 3 feet deep, located about 50 feet west of the TBS Gas Station in a wooded area. Waste electrolyte from used lead-acid batteries was drained at the site. No startup date for the unit is available. During the RFA VSI, one lead-acid battery was noted in the pit. However, there was no visible evidence (i.e., staining) of a release at the site.

This site was deferred to another regulatory program as a result of the Findings of Fact in the FFA (EPA, 1998). Thus, no action under the IRP is required.

A.8.3 M-05—Popping Furnace

This metal unit, approximately 25 feet long, 15 feet wide, and 8 feet high, is located in the Charlie Demo Area off MCB Route 2 within Training Area 5-A. Operations at the unit began in the late 1960s. The site was abandoned in 1976. Ammunition rounds (20-millimeter [mm]), fuses, and pyrotechnics were detonated at this site. Spent casings were sent elsewhere. During the RFA VSI, no staining was observed at the site. However, shell casings covered the ground surface to the east of the furnace, and several more shell casings were present in the combustion chamber of the furnace. Some of the rounds were still live.

During the 1994 field inventory, no visible evidence of stressed vegetation or contamination was apparent.

This site was deferred to another regulatory program as a result of the Findings of Fact in the FFA (EPA, 1998). Thus, no action under the IRP is required.

A.8.4 M-06, M-07, M-08—Old Batch Plant Drop Inlets No. 1 and 2 and Collection Sump

These three units comprised the drainage system for the Old Batch Plant (L-04) and the surrounding area, which is located within Training Area 3 near Interstate 636. No startup dates are available. The two inlets, which are 3-feet long and 4-feet deep, are approximately 10 feet apart. Wastewater from Inlet No. 2 (M-07) is covered with a solid metal lid and discharges through piping to Inlet No. 1 (M-06), which is covered with a metal grill. Another pipe

discharges the runoff to the Collection Sump (M-08). M-08 (2-feet by 2-feet by 6-feet deep) is located about 20 feet from M-06 and is covered with a perforated metal lid.

During the 1994 field inventory, a slight sheen and odor was found near M-06 and M-08. M-07 was found to be closed and filled with cement.

These sites were closed out under the RI/FS phase of the IRP. As identified in MCBQ IRP Consensus Agreement No. 6, the investigation of these sites was completed concurrently with the investigation of L-04 (Old Batch Plant) and B-07. The results of the RI were presented in the RI Report (Tetra Tech, 1998d). An interim soil removal action was performed at the sites during the RI stage, and an NFA ROD (NAVFAC, 2000a) was signed. The ROD indicated that confirmation sampling would be conducted to ensure that the previous removal action was adequate. The first round of confirmation sampling was completed in FY2001, and the associated results were presented at a March 7, 2002 meeting. During a March 27, 2002 conference call, the QPMT agreed that an additional round of monitoring was necessary. The second round of confirmation sampling was completed in August 2002, and the associated results were presented at the January 22, 2003 meeting. At a March 6, 2003 meeting, the QPMT decided to proceed to an EE/CA because it was assumed that residual sediment in the catch basins and drop inlets was contributing to contamination in a nearby drainage ditch, which eventually discharges to the Potomac River. The final EE/CA report (Tetra Tech, 2004b) was submitted to the QPMT on April 15, 2004. The Action Memorandum (EFACHES, 2004b) for the additional removal action was signed by the Navy on May 17, 2004. Another removal action and stream restoration (Shaw, 2005a) was completed from April to August 2005 to mitigate residual sediment contamination in the catch basins and drop inlets. A second NFA ROD (NAVFAC, 2007a) was signed in July 2007.

A.8.5 M-09 and M-10—Building 4 Waste Lockers No. 1 and 2

These sites were located adjacent to each other on the eastern side of Building 4, approximately 20 feet from the Potomac River in the Mainside of MCBQ. Waste Lockers No. 1 and 2 were metal units approximately 10 feet long, 4 feet wide, and 1 1/2 feet deep. They rested against the chain-link fence immediately north of the asphalt pad on the eastern side of Building 4 and were used by Base personnel for the temporary storage of materials used during small, short-term automotive maintenance projects (A. T. Kearney, 1989a and 1989b). No startup dates are available for M-09 and M-10. However, it is known that Locker No. 2 was older than Locker No. 1. During the RFA VSI, Locker No. 1 contained waste paints, thinners, and other products. Some of the containers were not labeled and were in poor condition (i.e., corroded). Lead-acid batteries, paint, and an oil container were stored in Locker No. 2. Spills of the stored materials were reportedly observed on the containers and shelves of the lockers and on the ground surface adjacent to and underneath the lockers. Although staining on the asphalt pad located along the outside of the eastern side of Building 4 was noted, no visible evidence of contamination (such as staining or stressed vegetation) was observed in the grassy area where the lockers were located.

Currently, no lockers exist at the sites or inside Building 4. The lockers were removed from the site in the late 1980s (Geophex, 1992). A new hazardous materials storage locker, constructed in the early 1990s, is located approximately 20 feet south of Building 4. Used tires on pallets and wooden scrap metal bins, containing painting supply containers and other non-metallic scrap items, are currently located on the asphalt pad in the general vicinity of M-09 and M-10.

The sites were closed out under the SSP phase of the IRP. DTA investigations were conducted at the sites during FY1998. The results of the DTA investigations are provided in DTA Report No. 2 (Tetra Tech, 1998c). The QPMT agreed to proceed to DTAWS investigations, which was completed during FY1999. The QPMT agreed to proceed to SSP investigations prior to the completion of a DTAWS report. SSP investigations were conducted in FY2001. The results of the DTAWS and SSP investigations were summarized at a July 9, 2002 QPMT meeting, where the QPMT agreed that no action was appropriate. A brief decision document (MCBQ IRP Closeout Document No. 22) was signed by the QPMT on July 9, 2002.

A.8.6 M-11 and M-12—Building 4 Waste Dumpsters No. 1 and 2

These sites were located next to each other on the northern portion of the asphalt pad on the eastern side of Building 4 in the general vicinity of M-9 and M-10 (Waste Lockers No. 1 and 2) approximately 20 feet from the Potomac River in the Mainside of MCBQ. Waste Dumpsters No. 1 and 2 were metal, open-topped units approximately 8 feet long, 4 feet wide, and 5 feet high. The dumpsters were situated within five feet of each other on the northern portion of the asphalt pad outside the eastern side of Building 4 and contained old engine parts, other metal parts, and some debris from Building 4. No startup dates are available for M-11 and M-12. Since the dumpsters were left uncovered, rainwater collected in the units. The rainwater was presumed to be contaminated with residual oils and petroleum products from the engine parts and other metal parts placed in the dumpsters. During the RFA VSI, the dumpsters were reported to be corroded. Dumpster No. 2 was observed to be leaking onto the asphalt pad and surrounding soils. A strong odor of decay was also noted (A.T. Kearney, 1989).

During the DTAWS and SSP site visit, no dumpsters were located on the asphalt pad outside of Building 4. No information was available as to how or where the materials in the dumpsters were disposed. It is suspected that the dumpsters were removed in the late 1980s at the same time Waste Lockers No. 1 and 2 (M-9 and M-10) were removed. Used tires on pallets and wooden scrap metal bins, containing painting supply containers and other non-metallic scrap items were located on the asphalt pad in the general vicinity of M-11 and M-12. Also, there was a dumpster located approximately 90 feet southeast of M-11 and M-12, just outside the chain-link fence surrounding Building 4.

The sites were closed out under the SSP phase of the IRP. DTA investigations were conducted at the sites during FY1998. The results of the DTA investigations were provided in DTA Report No. 2 (Tetra Tech, 1998c). The QPMT agreed to proceed to DTAWS investigations, which were completed during FY1999. Based on the results of the DTAWS investigations, the QPMT agreed to proceed to SSP investigations prior to the completion of a DTAWS report. An SSP investigation was conducted in FY2001. The results of the SSP investigations were summarized at a July 9, 2002 QPMT meeting, where the QPMT agreed that no action was warranted. A brief decision document (MCBQ IRP Closeout Document No. 22) was signed by the QPMT on July 9, 2002.

A.8.7 M-14—Old Sludge Drying Bed

This site is located south of the Mainside STP and about 300 feet west of the Potomac River. No startup date is available, but activities ceased around 1987. The unit consisted of an unlined area where dried sludges from the STP were deposited approximately once per year. A diked concrete pad approximately 40 feet by 20 feet was constructed over the drying bed. The concrete pad served as a transfer point, where wet sludges were loaded to be disposed at another location.

During the DTA site visit, the sludge drying bed was no longer present and the surrounding area was landscaped. The concrete pad was used as storage for flocculent drums. No visible evidence of contamination was found at the site.

The site was closed out under the DTAWS phase of the IRP. A DTA investigation was conducted at the site during FY2000. The results of the investigation were presented in DTA Report No. 9 (Tetra Tech, 2001b). The QPMT agreed to proceed to a DTAWS investigation, which was conducted in FY2001. The results of the DTAWS investigation were summarized at a June 5, 2002 meeting, where the QPMT agreed that no action was appropriate. A brief decision document (MCBQ IRP Closeout Document No. 16) was signed by the QPMT on June 6, 2002.

A.8.8 M-15 and M-16—South and North Coal Yards

These sites are located at the north and south ends of the Central Heating Plant within the Mainside to the south of Barnett Avenue. Runoff from the area is discharged under National Pollutant Discharge Elimination System Permit VA0002151 to two outfalls. Both units had concrete-diked walls several feet high. The North Coal Yard (M-16) is concrete-lined and the South Coal Yard (M-15) is unlined. The North Yard contained several tons of coal and the South Yard, as per an agreement with the state, was not allowed to store coal. Past discharges, which

would have been ultimately released to the Potomac River, may have contained hazardous materials since waste solvents and heating oils were poured over the coal piles prior to burning activities. No startup date is available. These sites are no longer in use.

The sites were closed out under the DTAWS phase of the IRP. DTAWS investigations were planned for the sites in FY2001. However, during the planning stages of the investigations, the QPMT conducted an April 12, 2001 site visit and agreed that no action was appropriate. A brief decision document (MCBQ IRP Closeout Document No. 4) was signed by the QPMT on October 3, 2001.

A.8.9 M-17—Building 28000 Former Drainage Channel (Site 91)

This unit is located adjacent to the concrete apron on the south side of Building 28000 north of Buffalo Road within Training Area 2. The unit received runoff and spills from maintenance activities at Building 28000 and wastewater from the adjacent wash rack (W-09). According to records obtained via the RFA VSI, the unit was backfilled with dirt and topped with gravel in 1987 because it was an unlined, environmentally unsafe unit (A. T. Kearney, 1989a and 1989b). The depth of the unit prior to backfilling is unknown.

The site was closed out under the DTAWS phase of the IRP. A DTAWS investigation was conducted at the site during FY1999. The results of the DTAWS investigation were presented at a March 1, 2001 meeting and further discussed during a May 15, 2001 conference call. The QPMT agreed that no action was appropriate. A brief decision document (MCBQ IRP Closeout Document No. 7) was signed by the QPMT on December 11, 2001.

A.8.10 M-18—Building 3090 Sink

This site is a metal unit located in Room 140 of Building 3090, which is the headquarters for the Marine Corps Band. The unit is located west of Range Road and approximately 50 feet from the RF&P Railroad. Operations at the unit began in January 1988. Musical instruments coated with a corrosive stripper known as "T-415 Electro Cold Stripper" are rinsed in this sink. Untreated rinse waters contaminated with the stripper solution are discharged to the sanitary sewer system (M-02).

The sink is no longer used for solvent rinse of band equipment. During the DTA site visit, no odor was present, and no visible evidence of contamination was found.

The site was closed out under the DTA phase of the IRP. A DTA investigation was conducted at the site during FY2001. The results of the DTA investigation were presented at an October 3, 2001 meeting, where the QPMT agreed that no action was appropriate. A brief decision document (MCBQ IRP Closeout Document No. 6) was signed by the QPMT on November 8, 2001.

A.8.11 M-19—Building 2205 Pathological Incinerator

This unit is located inside Building 2205, approximately 600 feet northwest of the Naval Regional Medical Clinic and within 100 feet of Quantico Creek. The unit began operations in the mid-1940s and ceased in the mid-1950s. Carcasses and other pathological wastes were incinerated in combustion chambers. During the RFA VSI, residual ash was observed in and around the combustion chambers. The incinerator was in a deteriorated condition, as was the building.

The pathological incinerator has been abandoned.

The site was closed out under the DTA phase of the IRP. A DTA investigation was conducted at the site during FY2001. The results of the investigation were presented at an October 3, 2001 meeting, where the QPMT agreed that no action was appropriate. A brief decision document (MCBQ IRP Closeout Document No. 6) was signed by the QPMT on November 8, 2001.

A.8.12 M-20—Building 3063 Abandoned Degreaser (Site 92)

This unit was placed and abandoned in 1988 against the west side of Building 3063, near the seventh fairway of the Base golf course. The degreaser reportedly contained approximately 5 gallons of a biodegradable cleaner

called "Gambit", which may have contained residual petroleum products and possibly pesticides. During the RFA VSI, a 15-square-foot area of white discolored soils was noted adjacent to and west of the unit.

It is suspected that the reported degreaser was actually a portable steam cleaner, which has been removed from the site. The cleaner was used to wash the exterior of golf course maintenance vehicles. During a DTAWS site visit, no visible evidence of stressed vegetation or contamination was observed at the site.

The site was closed out under the DTAWS phase of the IRP. A DTAWS investigation was planned for the site during FY2001. During the planning stages of the DTAWS investigation, the QPMT conducted an April 12, 2001 site visit and decided that no action was appropriate. A brief decision document (MCBQ IRP Closeout Document No. 4) was signed by the QPMT on October 3, 2001.

A.8.13 M-21 and M-22—Building 2113 Collection Sumps No. 1 and 2 (Sites 93 and 94)

These concrete units are located south of Building 2113, the Brown Field Heating Plant within Training Area 2. Start up or closure dates for the sites are not available. The sites collect surface runoff from the area surrounding the southern half of Building 2113. The sumps were tied originally to a series of catch basins that discharged to the Potomac River via an outfall.

Site 94 has been removed. Site 93 may have been intentionally plugged and is no longer operational.

The sites were closed out under the SSP phase of the IRP. Although the sites were originally DTAWS sites, an SSP investigation was conducted during FY2001 because SSP investigations were being conducted for other Building 2113 sites. The associated Work Plan for the FY2001 SSP investigation (Tetra Tech, 2001c) recommended that no action was warranted. During an April 12, 2001 site visit, the QPMT agreed that no action was appropriate. A brief decision document (MCBQ IRP Closeout Document No. 12) was signed by the QPMT on November 7, 2001.

A.8.14 M-23 and M-24—Buildings 24008 and 2009 Silver Recovery Units

The units are comprised of enclosed 10-gallon plastic containers connected to film processing machines in Buildings 24008 and 24009. Building 24008 (Camp Barrett Medical Clinic) is located off MCB Route 2 in the eastern portion of Camp Barrett within Training Area 8-A. Building 2009 is located at the intersection of Zeilin Road and Duncan Street, adjacent to the RF&P Railroad. The units have been used intermittently since the early 1980s to process wastewater contaminated with silver. Untreated wastewater from the units discharges to the building floor drains.

No visible evidence of contamination was found during the 1994 field inventory.

These sites were deferred to another regulatory program as a result of the Findings of Fact in the FFA (EPA, 1998). Thus, no action under the IRP is warranted.

A.8.15 M-25 and M-26—Old Brown Field and Central Heating Plant Boilers

The Old Brown Field Heating Plant is located in Building 2113 and is also known as the Air Facility Heating Plant or the Air Station Heating Plant within Training Area 2. The Central Heating Plant is located in Building 2010 in the vicinity of the North and South Coal Storage Yards to the south of Barnett Avenue. The facility could not provide start up dates, volumes of waste burned, integrities, or release controls or histories, for either of the units.

M-25 (Old Brown Field Heating Plant Boilers) was deferred to another program under the SSP phase of the IRP. Although the site was originally identified as a DTAWS site, an SSP investigation was conducted at the site during FY2001 because SSP investigations were to be completed at other Building 2113 sites. The associated work plan for the FY2001 SSP investigation (Tetra Tech, 2001c) recommended that the site be deferred to another regulatory program that manages asbestos-containing material. During an April 12, 2001 site visit, the QPMT agreed to defer the site to another program. Thus, no action under the IRP is required. A brief decision document (MCBQ IRP Deferral Document No. 3) was signed by the QPMT on January 16, 2001.

M-26 (Central Heating Plant Boilers) was deferred to another regulatory program as a result of the Findings of Fact in the FFA (EPA, 1998). Thus, no action under the IRP is required.

A.8.16 M-28—Trash Dumpsters

This site is comprised of over 300 portable, metal trash dumpsters with hinged covers that are used throughout the facility to collect, transport, and dispose of wastes at the Quantico Sanitary Landfill. The dumpsters are labeled "Dempsey Dumpsters" and typically contain solid waste (paper, rags, wood, and other debris). However, during the RFA VSI, some dumpsters contained contaminated debris, air filters contaminated with paints and thinners, cleaning rags contaminated with cleaners and solvents, empty paint containers, etc. Also, used lead-acid batteries were reportedly found in some dumpsters. As recent as June 1988, one battery was found in a dumpster.

No visible evidence of releases was found during the 1994 field inventory.

This site was deferred to another regulatory program as a result of the Findings of Fact in the FFA (EPA, 1998). Thus, no action under the IRP is required.

A.8.17 M-29—Building 2427 Drum Disposal Area

This 5-foot by 5-foot drum storage area is located at the south corner of the parking lot of Building 2427 within Training Area 5-B adjacent to MCB Route 1. The location of this site is in the vicinity of existing Building 27007 (Log Cabin). During the RFA VSI, one closed-top rusted drum containing approximately 10 gallons of oil (PD-680) was reportedly stored at the site.

During the 1994 field inventory, no drums were present. No stressed vegetation or visible evidence of contamination was observed.

The site was closed out under the RI/FS phase of the IRP. As identified in MCBQ IRP Consensus Agreement No. 6, the investigation of this site was completed concurrently with the investigation of L-01 (Pesticide Burial Area), L-17, and L-18. The results of the RI were presented in the RI Report (Tetra Tech, 1998d). An interim removal action was performed at L-01 during the RI stage. An NFA ROD (NAVFAC, 2000b) was signed. One round of confirmation sampling, as discussed in the ROD, was performed during FY2001. The results of the confirmation sampling were presented at a March 7, 2002 meeting, where the QPMT agreed that no further monitoring or action was necessary. A brief decision document (Confirmation Sampling Decision Document No. 1) was signed by the QPMT on May 16, 2002.

A.8.18 M-30—Building 24009 Settling Pit

This 50-foot by 20-foot by 5-foot concrete pit is located northwest of Building 24009 on MCB Route 3 in the Camp Barrett area of MCBQ, within Training Area 7-B. The pit managed washwater containing nonphosphate biodegradable soap and residual petroleum products from vehicle washing and refueling activities. Washwater discharged to an oil/water separator (O-09).

No releases were identified during the DTA site visit.

The site was closed out under the DTA phase of the IRP. A DTA investigation was completed for the site during FY1998. The results of the DTA investigation were presented at a January 17, 2001 meeting, where the QPMT agreed that no action was appropriate. A brief decision document (MCBQ IRP Closeout Document No. 5) was signed by the QPMT on October 3, 2001.

A.8.19 M-31—Building 24008 Accumulation Area

This 15-foot by 6-foot concrete storage area is located south of and adjacent to Building 24008 (Camp Barrett Clinic) north of MCB Route 2 within Training Area 8-A. This area is used for the temporary storage of pathological wastes from the medical and dental clinic. The wastes are stored on pallets prior to ultimate disposal elsewhere.

No visible evidence of contamination was identified during the 1994 field inventory.

The site was deferred to another regulatory program as a result of the Findings of Fact in the FFA (EPA, 1998). Thus, no action under the IRP is warranted.

A.8.20 M-32—TSSU Dust Control System

This site is located in the Carpenter Shop in the TSSU Building on MCB Route 1 in the central portion of the MCBQ on the boundary of Training Areas 8-B and 11-B. The site, which manages sawdust, is a series of ducts along the ceiling that leads to a baghouse.

No visible evidence of contamination was identified during the 1994 field inventory.

The site was deferred to another regulatory program as a result of the Findings of Fact in the FFA (EPA, 1998). Thus, no action under the IRP is warranted.

A.8.21 M-33—Building 2200 Infectious Waste Accumulation Area

This 25-foot by 15-foot refrigerated unit is located inside Building 2200 on Lester Street in the northern portion of the Mainside of the MCBQ. This site manages pathological waste from the medical clinic. Wastes are stored in a refrigerated unit that is placed on a concrete surface.

No visible evidence of contamination was identified during the 1994 field inventory.

The site was deferred to another regulatory program as a result of the Findings of Fact in the FFA (EPA, 1998). Thus, no action under the IRP is required.

A.8.22 M-34—Building 3034 Dust Control System

This site is located in Building 3034 at the end of Broadway in the northern portion of the Mainside of the MCBQ. The site, which manages sawdust, is a series of ducts along the ceiling that leads to a baghouse.

No visible evidence of contamination was identified during the 1994 field inventory.

The site was deferred to another regulatory program as a result of the Findings of Fact in the FFA (EPA, 1998). Thus, no action under the IRP is required.

A.8.23 M-35—Building 2009 Silver Recovery Units Accumulation Area

This 10-foot by 10-foot area is located inside Building 2009, which is located on Zeilen Road adjacent to the RF&P Railroad on the Mainside of the MCBQ. This site manages silver recovery units and film papers. Wastes are stored above a concrete surface that was reportedly in good condition during the RFA VSI.

No releases were identified during the 1994 field inventory. Silver recovery units were stored on steel racks. Secondary containment was present.

The site was closed out under the DTA phase of the IRP. A DTA investigation was conducted at the site during FY2001. The results of the DTA investigation were presented to the QPMT at an October 3, 2001 QPMT meeting, where the QPMT agreed that no action was appropriate. A brief decision document (MCBQ IRP Closeout Document No. 6) was signed by the QPMT on November 8, 2001.

A.9 Oil/Water Separators

This section presents brief site descriptions of the oil/water separators, as presented in the Phase II RFA (A.T. Kearney, 1989b).

A.9.1 O-01 and O-02—Building 3045 Oil/Water Separators No. 1 and 2

Building 3045, part of the Ordnance Maintenance Section Support Branch, is located within the Mainside of the MCBQ adjacent to Barnett Avenue. O-01 is located on the northeast side of the Building 3045, while O-02 is located on the southwestern side of the building. No installation dates are available for the sites. Both oil/water separators are connected to 550-gallon recovery tanks and were constructed so that final effluent wastewater is discharged to the sanitary sewer system (M-02). Pumping activities have occurred at both oil/water separators.

The recovery tank associated with O-01 was backfilled with sand and soil in January 1999. Removal of the tank associated with O-02 occurred in April 1993. The pipes leading from the units to the tanks were plugged and capped; the oil/water separators have been filled with concrete.

The sites were closed out under the DTAWS phase of the IRP. DTA investigations were completed for the sites during FY1999. The results of the investigations were presented in DTA Report No. 5 (Tetra Tech, 2000e). The QPMT agreed to proceed to DTAWS investigations, which were conducted in FY2001. The results of the DTAWS investigations were presented at a March 7, 2002 QPMT meeting, where the QPMT agreed that no action was appropriate. A brief decision document (MCBQ IRP Closeout Document No. 9) was signed by the QPMT on April 9, 2002.

A.9.2 O-03—Building 2112 Oil/Water Separator

Building 2112, the Air Field Maintenance Hangar (known as Larsons Gym), is located on Bauer Road within the Mainside of the MCBQ. O-03 was supposedly a 10,000-gallon oil/water separator connected to an UST at Building 2112 (A. T. Kearney 1989a and 1989b); the separator reportedly discharged to the storm sewer system at an outfall located along the banks of Chopawamsic Creek or the Potomac River.

No records are available regarding the presence of a 10,000-gallon oil/water separator at the site. A new 50-gallon oil/water separator was installed at the building in 1994. This unit and the associated wash rack are used for washing vehicles with nonphosphate biodegradable soap. The number of vehicles washed per day varies, but on the average one vehicle is washed per day.

The site was closed out under the DTAWS phase of the IRP. A DTA investigation was completed for the site in FY1999. The results of the DTA investigation were presented in final DTA Report No. 5 (Tetra Tech, 2000e). The QPMT agreed to proceed to a DTAWS investigation. The sampling design for the DTAWS investigation was presented in the FY2002 DTAWS Work Plan Addendum (Tetra Tech, 2002). The results of the DTAWS investigation were presented at a March 5, 2003 QPMT meeting, where the QPMT agreed that no action was appropriate. A brief decision document (MCBQ IRP Closeout Document No. 27) was signed by the QPMT on April 23, 2003.

A.9.3 O-04—Building 27263 Oil/Water Separator

This 10,000-gallon oil/water separator is located near a UST (TA-1) within Training Area 5-A of the CER area at the MCBQ. The oil/water separator was installed in 1983 to collect runoff from the fuel farm. The tanks at the fuel farm contain gasoline, JP-5, No. 2 fuel oil, diesel fuel, and kerosene (Geophex, 1992). Wastes were reportedly pumped from the unit on several different occasions.

O-04 was removed in October 1998 and replaced with a new double tank oil/water separator. Wastewater from the unit discharges to an intermittent storm drainage area (i.e., leach field) immediately southeast of the site via underground drainage lines.

The site was closed out under the DTAWS phase of the IRP. A DTA investigation was completed for the site during FY1999. The results of the investigation were presented in DTA Report No. 5 (Tetra Tech, 2000e). The QPMT

agreed to proceed to a DTAWS investigation. The sampling design for the DTAWS investigation was presented in the FY2002 DTAWS Work Plan Addendum (Tetra Tech, 2002). The results of the DTAWS investigation were presented at a March 5, 2003 QPMT meeting, where the QPMT agreed that no action was appropriate. A brief decision document (MCBQ IRP Closeout Document No. 27) was signed by the QPMT on April 23, 2003.

A.9.4 O-05—Building 28000 Oil/Water Separator

This site is located near Building 28000 to the north of Buffalo Road within Training Area 2 on the Mainside of the MCBQ. The oil/water separator had an estimated capacity of 4,000 gallons.

During the 1994 field inventory, this oil/water separator was found to be no longer active. Evidence of leakage was found in the construction pit of a new oil/water separator at this site.

The site was deferred to another regulatory program under the DTA phase of the IRP. A DTA investigation was completed during FY1999. The results of the DTA investigation were presented to the QPMT at a March 1, 2001 meeting and further discussed during a May 15, 2001 conference call. The QPMT agreed to defer the site to the UST Program. Thus, no action under the IRP is required. A brief decision document (MCBQ IRP Deferral Document No. 1) was signed by the QPMT on December 11, 2001.

A.9.5 O-06—Building 4 Oil/Water Separator

This site is located between Building 4 (Auto Hobby Shop) and the Potomac River within the Mainside of the MCBQ. Washwater from operations inside Building 4 was discharged to a 550-gallon underground oil/water separator (O-06), which discharged directly to the Potomac River. O-06 is located on the eastern central edge of the parking lot apron (AOC-C).

O-06 is no longer in operation. The pipes leading to O-06 have been removed and the actual oil/water separator was closed in place with concrete.

The site was closed out under the SSP phase of the IRP. A DTA investigation was completed at the site during FY1999. The results of the DTA investigation were presented in DTA Report No. 6 (Tetra Tech, 2000b). An SSP investigation was conducted at all Building 4 sites during FY2001. The results of the SSP investigation were summarized at a July 9, 2002 meeting, where the QPMT agreed that no action was appropriate. A brief decision document (MCBQ IRP Closeout Document No. 22) was signed by the QPMT on July 9, 2002.

A.9.6 O-07—Building 3220 Oil/Water Separator

This site is located near Building 3220 (a Quonset hut built in 1951) adjacent to Ruhl Street within the Mainside of MCBQ. The exact location of the oil/water separator is unknown. No information is available regarding the site. The site was not visited during the RFA VSI.

Based on information received during DTA and DTAWS research activities, an oil/water separator was never located at Building 3220.

The site was closed out under the DTAWS phase of the IRP. A DTA investigation was completed for the site during FY1999. The results of the investigation were presented in DTA Report No. 5 (Tetra Tech, 2000e). Initially, the QPMT agreed to proceed to a DTAWS investigation. However, the QPMT agreed that no action was appropriate during an April 11, 2001 site visit. A brief decision document (MCBQ IRP Closeout Document No. 4) was signed by the QPMT on October 3, 2001.

A.9.7 O-08—Sanitary Landfill Oil/Water Separator

This site is located in the Quantico Sanitary Landfill (L-16) at the CER area of the MCBQ within Training Area 8-B. The oil/water separator had an estimated capacity of 4,000 gallons.

The oil/water separator has been removed and replaced with a new soil/water and a wash rack.

The site was closed out under the DTA phase of the IRP. A DTA investigation was conducted at the site during FY2000. The results of the DTA investigation were presented in DTA Report No. 10 (Tetra Tech, 2000d). The QPMT agreed that no action was appropriate. The DTA Report and the signed signature page for the report serve as the brief decision document for the site.

A.9.8 O-09—Building 24009 Oil/Water Separator

This site is located at the TBS Vehicle Maintenance Facility on MCB Route 3 in the Camp Barrett area of the MCBQ within Training Area 7-B. This oil/water separator received drainage from vehicle washing activities and has received wastes during past operations. The oil/water separator had an estimated capacity of 4,000 gallons.

The site was closed out under the DTAWS phase of the IRP. A DTA investigation was completed for the site during FY1998. The QPMT agreed to proceed to a DTAWS investigation, which was completed in FY2001. The results of the DTAWS investigation were presented at a January 17, 2001 meeting and further discussed at an April 10, 2001 meeting, where the QPMT agreed to proceed to a supplemental DTAWS investigation. The results of the supplemental DTAWS investigation were presented at a December 11, 2001 QPMT meeting, where the QPMT agreed that no action was appropriate. A brief decision document (MCBQ IRP Closeout Document No. 8) was signed by the QPMT on January 16, 2002.

A.9.9 O-10—Building 3400 Oil/Water Separator

The site is located at the commissary at the center of the MCBQ near the intersection of Russell Road and Purvis Road. Although the RFA Reports (A. T. Kearney 1989a and 1989b) identified the site as the Building 3400 oil/water separator, the site is actually a concrete fuel oil spill containment unit that was formerly located between the eastern side of the commissary and the western side of the Post Exchange (Geophex, 1992). The spill containment was designed to collect any spill of fuel from the emergency generator located on the west side of the exchange or from the filling of the Building 3400 UST. The containment area was developed so that when rainwater would collect in the containment unit, a valve could be opened to release the water to the sanitary sewer system (M-02).

The spill containment unit is no longer present at the site. In 1996 when an addition to the commissary was constructed, the site was removed and paved over with asphalt.

The site was closed out under the DTAWS phase of the IRP. A DTA investigation was completed for the site during FY1999. The results of the DTA investigation were presented in DTA Report No. 5 (Tetra Tech, 2000e). The QPMT agreed to proceed to a DTAWS investigation, which was conducted in FY2002. The results of the DTAWS investigation were presented at an April 9, 2002 meeting, where the QPMT agreed that no action was appropriate. A brief decision document (MCBQ IRP Closeout Document No. 14) was signed by the QPMT on May 16, 2002.

A.9.10 O-11—Building 24007 Oil/Water Separator

The site is located at TBS on MCB Route 3 in the Camp Barrett area of the MCBQ within Training Area 7-B. The oil/water separator had an estimated capacity of 4,000 gallons.

This oil/water separator has been removed and replaced with a new oil/water separator, sump, and wash rack that drain directly to the sanitary sewer system (M-02).

The site was closed out under the DTA phase of the IRP. A DTA investigation was completed for the site during FY2000. The results of the DTA investigation were presented in DTA Report No. 10 (Tetra Tech, 2000d). The QPMT agreed that no action was warranted. The DTA Report and the signed signature page for the report serve as the brief decision document for the site.

A.10 Trenches

All of the following trenches are constructed of concrete and manage wastewater containing nonphosphate biodegradable soap and residual petroleum products. This section presents brief site descriptions of the Trenches, as presented in the Phase II RFA (A. T. Kearney, 1989b).

A.10.1 T-01—Building 24009 Wash Rack Area Trench

This area is located at the wash rack (W-03) area adjacent to MCB Route 3 in the Camp Barrett area of the MCBQ within Training Area 7-B. The unit discharges to a settling pit (M-30).

The site was closed out under the DTA phase of the IRP. A DTA investigation was completed for the site during FY1998. The results of the DTA investigation were presented at a January 17, 2001 meeting, where the QPMT agreed that no action was appropriate. A brief decision document (MCBQ IRP Closeout Document No. 5) was signed by the QPMT on October 3, 2001.

A.10.2 T-02—Building 24009 Trench

This site is located at Building 24009 adjacent to MCB Route 3 in the Camp Barrett area of the MCBQ within Training Area 7-B. The unit discharges to an oil/water separator (O-09).

The site was closed out under the DTA phase of the IRP. A DTA investigation was completed for the site during FY1998. The results of the DTA investigation were presented at a January 17, 2001 meeting, where the QPMT agreed that no action was appropriate. A brief decision document (MCBQ IRP Closeout Document No. 5) was signed by the QPMT on October 3, 2001.

A.10.3 T-03—Building 4 Trench

This site is located at the Auto Hobby Shop (Building 4) within Training Area 2 of the Mainside of the MCBQ adjacent to the Potomac River. T-03 was reportedly a concrete trench, which was used for the disposal of wastewater from floor washings (A. T. Kearney, 1989a and 1989b). However, a trench was never located inside the building. The site is most likely a floor drain that was connected to piping that was connected to the storm sewer system (M-01). Washwater from floor washings was disposed via the floor drain. Non-phosphate biodegradable soap was used to mop the shop area; petroleum residue from vehicles was likely discharged to the floor drain. The piping associated with the drain was located in the center of the shop floor and extended from the western side to the eastern side of the building.

The floor drain and piping have been filled with cement.

The site was closed out under the SSP phase of the IRP. A DTA investigation was completed for the site during FY1999. The results of the investigation were presented in DTA Report No. 6 (Tetra Tech, 2000b). The QPMT agreed to proceed to defer making a decision regarding the site until the results of DTAWS investigations at other Building 4 sites were available. The QPMT proceeded with SSP investigations at all Building 4 sites in FY2001. The results of the SSP investigation were presented to the QPMT at a July 9, 2002 meeting, where the QPMT agreed that no action was appropriate for T-03. A brief decision document (MCBQ IRP Closeout Document No. 22) was signed by the QPMT on July 9, 2002.

A.10.4 T-04—Building 2112 Trench

This site is located along the north and west sides of Larsons Gym (Building 2112) adjacent to Chopawamsic Creek within Training Area 2. The unit discharges to the storm sewer system (M-01).

During the DTA site visit, the trench was found to be dry and clean, and no visible evidence of contamination was observed.

The site was closed out under the DTA phase of the IRP. A DTA investigation was conducted during FY2002. The results of the DTA investigation were presented at a March 7, 2002 meeting, where the QPMT agreed that no

action was appropriate. A brief decision document (MCBQ IRP Closeout Document No. 10) was signed by the QPMT on April 9, 2002.

A.10.5 T-05—Building 2130 Trench

This site is located on the east side of Building 2130 adjacent to the Potomac River within Training Area 2. The unit discharges to the storm sewer system (M-01).

During the DTA site visit, the trench had been removed, and no visible evidence of contamination was observed.

The site was closed out under the DTA phase of the IRP. A DTA investigation was conducted during FY2002. The results of the DTA investigation were presented during the March 7, 2002 QPMT meeting, where the QPMT agreed that no action was appropriate. A brief decision document (MCBQ IRP Closeout Document No. 10) was signed by the QPMT on April 9, 2002.

A.10.6 T-06—Building 2101 Trench

This trench, which was constructed in 1964 to prevent waste/wastewater from entering Building 2101 (helicopter maintenance hangar), is located on the north and south sides of the building adjacent to the Marine Corps Air Facility Turner Airfield and on the northern side of Rowell Road. The trench consists of a 12-inch heavy duty steel grate, which covers a 4-inch deep trench. The unit discharges to the storm sewer system (M-01).

During a DTA site visit, the trenches were free of material, and no wastes managed near the trench. No visible evidence of contamination was observed.

The site was closed out under the DTA phase of the IRP. A DTA investigation was completed for the sites during FY1999. The results were presented in DTA Report No. 6 (Tetra Tech, 2000b). The QPMT agreed that no action was appropriate. The DTA Report and the signed signature page of the report serve as the brief decision document for the site.

A.10.7 T-07—Building 2103 Trench

This site is located at Building 2103, adjacent to the airfield and on the southern side of Rowell Road. The unit discharges to the storm sewer system (M-01).

Based on the DTA research activities, the trench has not and does not serve as a wastewater drain that would be expected to contain residual hazardous wastes.

The site was closed out under the DTA phase of the IRP. A DTA investigation was conducted at the site during FY2001. The results of the DTA investigation were presented during an August 29, 2001 meeting, where the QPMT agreed that no action was appropriate. A brief decision document (MCBQ IRP Closeout Document No. 6) was signed by the QPMT on November 8, 2001.

A.10.8 T-08—Building 2103 Trench

This site is located at Building 2103, adjacent to the airfield and on the southern side of Rowell Road. The unit discharges to the storm sewer system (M-01).

Based on the DTA research activities, the trench has not and does not serve as a wastewater drain that would be expected to contain residual hazardous wastes.

The site was closed out under the DTA phase of the IRP. A DTA investigation was conducted at the site during FY2001. The results of the DTA investigation were presented during an August 29, 2001 QPMT meeting, where the QPMT agreed that no action was appropriate. A brief decision document (MCBQ IRP Closeout Document No. 6) was signed by the QPMT on November 8, 2001.

A.10.9 T-09—Building 3016 Trench

This site is located at the center of Structure 3016 to the north of Barnett Avenue in the Mainside of the MCBQ. The trench is used for the conveyance of washwater generated from a nearby wash rack. The unit discharges to the sanitary sewer system (M-02).

The site was closed out under the DTA phase of the IRP. A DTA investigation was conducted at the site during FY2001. The results of the DTA investigation were presented during an August 29, 2001 meeting, where the QPMT agreed that no action was appropriate. A brief decision document (MCBQ IRP Closeout Document No. 6) was signed by the QPMT on November 8, 2001.

A.10.10 T-10—Building 27054 Trench

This site is located at Building 27054 within Training Area 8-B on MCB Route 1 in the CER area of the MCBQ. The unit discharges to the storm sewer system (M-01).

During the 1994 field inventory, this trench was found to be a newly engineered trench that drained into an oil water separator.

The site was closed out under the DTAWS phase of the IRP. A DTA was conducted for the site in FY2002. The results of the DTA investigation were presented at a July 18, 2002 meeting, where the QPMT agreed to proceed to a DTAWS investigation. The sampling design for the DTAWS investigation was presented in the FY2002 DTAWS Work Plan (Tetra Tech, 2002). The results of the DTAWS investigation were presented at a March 5, 2003 QPMT meeting, where the QPMT agreed that no action was appropriate. A brief decision document (MCBQ IRP Closeout Document No. 27) was signed by the QPMT on April 23, 2003.

A.11 Waste Storage Tanks

These units are comprised of tanks, which were suspected of managing wastes other than standard petroleum products. Because of the lack of records documenting use, there is little known information regarding these units. This section presents brief site descriptions of the waste storage tanks, as presented in the Phase II RFA (A. T. Kearney, 1989b).

A.11.1 TA-01—Building 2113 Underground Tank

Building 2113, the Brown Field Heating Plant, is located within the Mainside of the MCBQ along the Potomac River and adjacent to Bauer Road. TA-01 is a concrete, single-walled UST (designated as UST 2157) located south of Building 2113 near Hanson Avenue within Training Area 2. The capacity of the tank was 103,000 gallons and was used for temporary storage of No. 6 fuel oil. Waste paint strippers, thinners, and other halogenated solvents may be components of the waste stored in the tank because these products were added to the fuel. Fuel oil from TA-01 was piped to three 10,000-gallon steel, single-walled USTs (designated as USTs 2158, 2159, and 2160), which subsequently delivered fuel to boilers inside Building 2113. TA-01 was installed in 1941 and was deactivated in 1983.

The tank was demolished and closed in-place under the Phase III UST Removal Contract in the spring of 1996.

The site was closed out under the SSP phase of the IRP. A DTA investigation was conducted at the site during FY2000. The results of the DTA investigation were provided in DTA Report No. 8 (Tetra Tech, 2000c). The QPMT agreed to proceed to an SSP investigation, which was conducted in FY2001. The results of the SSP investigation were summarized at a July 9, 2002 meeting, where the QPMT agreed that no action was appropriate. A brief decision document (MCBQ IRP Closeout Document No. 22) was signed by the QPMT on July 9, 2002.

A.11.2 TA-02, TA-03, and TA-04—Building 27054 Tanks No. 1, 2, and 3

These aboveground storage tanks (ASTs) were located northeast of Building 27054 in the CER area on MCB Route 1 within Training Area 8-B. The tanks were located within a concrete containment area with diked walls. All of the tanks were used to store waste oils. The capacity of TA-02, TA-03, and TA-04 were 10,000 gallons, 1,000 gallons, and 500 gallons, respectively. No releases were identified at the sites.

The tanks were removed and disposed February 8 and 9, 1993.

The sites were closed out under the DTA phase of the IRP. DTA investigations were conducted during an August 29, 2001 meeting, where the QPMT agreed that no action was appropriate. A brief decision document (MCBQ IRP Closeout Document No. 6) was signed by the QPMT on November 8, 2001.

A.11.3 TA-05—TBS Gas Station Underground Tank

This UST (designated as Tank 2483F) was located behind the TBS Gas Station (Building 2483) in the Camp Barrett area on MCB Route 3 in Training Area 7-B. The tank capacity was estimated at 1,000 gallons and was used to store waste oils. No releases were identified at the site.

The tank was removed and disposed of January 26, 1994.

This site was deferred to another regulatory program as a result of the Findings of Fact in the FFA (EPA, 1998). Thus, no action under the IRP is warranted.

A.11.4 TA-06—Building 2121 Underground Tank

This UST (designated as Tank 2199) is located 200 feet east of Building 2121 adjacent to the RF&P Railroad within Training Area 2. The tank capacity is estimated at 11,000 gallons and was used as a gasoline storage tank. No releases have been identified.

This site was deferred to another regulatory program as a result of the Findings of Fact in the FFA (EPA, 1998). Thus, no action under the IRP is required.

A.11.5 TA-07—New Burn Pit Underground Tank

The site actually consisted of two USTs, which were located approximately 20 feet northeast of the New Burn Pit Site (L-12) within the Marine Corps Air Facility Turner Airfield. The tanks were used to store surface water runoff from the T-58 Engine Test Pad (L-15) and from the New Burn Pit. No releases were identified at the site.

The tanks were removed and disposed March 9, 1993.

This site was deferred to another regulatory program as a result of the Findings of Fact in the FFA (EPA, 1998). Thus, no action under the IRP is required.

A.11.6 TA-08—Camp Goettge Underground Tank No. 1

This site is located within Camp Goettge at Training Area 14 in the Guadalcanal Area of the MCBQ. The site actually consists of abandoned piping for two 20,000-gallon ASTs, which contained No. 2 heating oil. The tanks were removed during the Camp Goettge abandonment.

This site was deferred to another regulatory program as a result of the Findings of Fact in the FFA (EPA, 1998). Thus, no action under the IRP is required.

A.11.7 TA-09—Camp Goettge Underground Tank No. 2

The site is located in Camp Goettge northwest and adjacent to Camp Goettge South Disposal Area (L-28) within Training Area 14. The site consists of piping for an abandoned fuel loading station that served two 20,000-gallon ASTs, which contained No. 2 heating oil. The associated tanks were removed during the Camp Goettge abandonment.

This site was deferred to another regulatory program as a result of the Findings of Fact in the FFA (EPA, 1998). Thus, no action under the IRP is required.

A.11.8 TA-10—Building 3141 Tank

This UST (designated as Tank 3141E) was located at the Quantico Tire & Auto Center to the south of Barnett Avenue in the Mainside of the MCBQ. The tank was used to store waste oils. No releases were identified.

The tank was removed and disposed August 11, 1993.

This site was deferred to another regulatory program as a result of the Findings of Fact in the FFA (EPA, 1998). Thus, no action under the IRP is required.

A.11.9 TA-11—Building 24009 Underground Tank

This UST (Tank 24009A) is located at the southeast end of Building 24009 within Training Area 7-B in the Camp Barrett area on MCB Route 3. It serves as the waste oil collection tank for an active oil/water separator (SWMU O-9) for the floor drains at Building 24009. No releases were identified during the 1994 field inventory. This tank is scheduled to be replaced with a new oil water separator at O-09.

This site was deferred to another regulatory program as a result of the Findings of Fact in the FFA (EPA, 1998). Thus, no action under the IRP is required.

A.11.10 TA-12 and TA-13—Motor Transport Fuel Tanks No. 24160 and 24161

These USTs were located south of the Building 24007 wash rack (W-02) within Training Area 7-B in the Camp Barrett area on MCB Route 3. The sites were former fuel storage tanks. No releases were identified.

The tanks were removed and disposed November 10, 1991.

The sites were deferred to another regulatory program as a result of the Findings of Fact in the FFA (EPA, 1998). Thus, no action under the IRP is required.

A.12 Sewage Treatment Plants

This section presents brief site descriptions of the STPs, as presented in the Phase II RFA (A. T. Kearney, 1989b).

A.12.1 TP-42, TP-43, and TP-44—Camp Upshur Sewage Treatment Plant

This STP is located in the eastern part of Camp Upshur within Training Area 17-A. The plant is comprised of 16 units that manage and process sanitary wastes. The plant may have received wastes contaminated with hazardous constituents. No releases from these units were identified during the RFA VSI.

The site was closed out under the DTAWS phase of the IRP. DTAWS investigations were completed at TP-42, TP-34, and TP-44 during FY2001. The results of the DTAWS investigations were presented at an April 9, 2002 meeting, where the QPMT agreed that no action was appropriate. A brief decision document (MCBQ IRP Closeout Document No. 14) was signed by the QPMT on May 16, 2002.

A.12.2 TP-45—Old Brown Field Sewage Treatment Plant (Site 28)

TP-45 is located approximately 45 feet south of the Air Station Disposal Area (L-28) and 3,000 feet off the intersection of Bauer Road and Chopawamsic Creek. Abrahams Creek (and a marsh area) borders the site to the west and the RF&P railroad tracks lie to the east. The unit, which is approximately 64,000 square feet, was placed into operation in the 1960s. While the STP was operating, contaminated waters may have been discharged to Chopawamsic Creek via the plant's outfall. No information is available on the level of treatment provided for the wastes received or the flow capacity (A.T. Kearney, 1989a and 1989b). Operations at the site ceased in 1978.

Most of the plant was removed some time after the 1994 field inventory. During the SSP investigation, the only remaining components of the STP were the sludge holding tanks located in an open area of the site, a catch basin situated in the wooded area east of the sludge holding tanks, and the plant's outfall.

As a result of a review of historical maps for the site conducted during the DTAWS investigation, it was determined that a pistol range had existed near Site 28. The pistol range consisted of three target areas. The site first appeared on a 1952 topographic survey map of the area. No evidence of the range was observed on a 1986 topographic survey map. No other information is available for the pistol range. The pistol range was investigated along with TP-45.

TP-45 (and the pistol range) was closed out under the SSP phase of the IRP. A DTAWS investigation was conducted at the site during FY1998. Prior to the completion of a DTAWS report, the QPMT agreed that the site would proceed to an SSP investigation, which was conducted during FY2000. The results of the DTAWS and SSP investigations are provided in SSP No. 3 (Tetra Tech, 2001d). During a June 6, 2002 meeting, the QPMT agreed that no action was appropriate for TP-45 (and the pistol range). A brief decision document (MCBQ IRP Closeout Document No. 18) was signed by the QPMT on September 4, 2002.

A.12.3 TP-47—Camp Goettge Sewage Treatment Plant (Site 27)

TP-47 is located in the western portion of Camp Goettge north of the Camp Goettge South Disposal Area (L-26) within the Guadalcanal Area of the MCBQ. The plant managed sewage effluent, which was generated at the now abandoned Camp Goettge. The plant may have received waste contaminated with hazardous constituents. The site was not visited during the RFA VSI.

The plant is inactive. Remnants of the STP are still present at the site. During the DTAWS site visit, the site was overgrown with vegetation. No visible evidence of contamination was found.

The site was closed out under the DTAWS phase of the IRP. A DTAWS investigation was conducted during FY1998. The results of the DTAWS investigation were presented in DTAWS Report No. 2 (Tetra Tech, 2000g). At a July 10, 2001 meeting, the QPMT agreed to conduct a supplemental DTAWS investigation, which was completed during FY2001. The results of the supplemental DTAWS investigation were presented at a December 11, 2001 QPMT

meeting, where the QPMT agreed that no action was appropriate. A brief decision document (MCBQ IRP Closeout Document No. 8) was signed by the QPMT on January 16, 2002.

A.12.4 TP-48—Rifle Range Sewage Treatment Plant (Site 29)

This site is located in the central portion of MCBQ (Guadalcanal Area) on the boundary of Training Areas 8-B and 11-B. The site is located southwest of Building 27054 in the Rifle Range Area on MCB Route 1. The plant managed sewage effluent and may have received waste contaminated with hazardous constituents. The site was not visited during the RFA VSI.

The plant is inactive. Remnants of the STP are no longer present at the site.

The site was closed out under the SSP phase of the IRP. A DTAWS investigation was conducted at the site during FY1998. Prior to the completion of a DTAWS report, the QPMT agreed that the site would proceed to an SSP investigation, which was conducted at the site during FY1999. The results of the SSP investigation were presented in SSP Report No. 2 (Tetra Tech, 2001a). The QPMT agreed to proceed to a supplemental SSP investigation, which was conducted during FY2002. The results of the supplemental SSP were presented at a March 7, 2002 meeting, where the QPMT agreed that no action was appropriate. A brief decision document (MCBQ IRP Closeout Document No. 13) was signed by the QPMT on March 7, 2002.

A.13 Wash Racks

This section presents brief site descriptions of the wash racks as presented in the Phase II RFA (A. T. Kearney, 1989b).

A.13.1 W-01—Building 4 Wash Rack

This site is located in the southeast interior corner of Building 4 (Auto Hobby Shop), which is located in the Mainside within Training Area 2 adjacent to the Potomac River. During the 1980s, the 40-foot by 20-foot unit was used for washing automobiles with nonphosphate, biodegradable soap. Washwater from W-01 discharged to an oil/water separator (O-06), which is located approximately 40 feet east of Building 4. O-06 discharged washwater to the storm sewer system (M-01) via an outfall located along the bank of the Potomac River.

In the early 1990s, the wash rack was filled with cement and automobile washing ceased at Building 4.

The site was closed out under the SSP phase of the IRP. A DTA investigation was completed for the site during FY1999. The results of the DTA investigation were presented in DTA Report No. 6 (Tetra Tech, 2000b). The QPMT agreed to postpone making a decision regarding the site until the results of DTAWS investigations that were conducted at other Building 4 sites during FY1999 were available. However, prior to the completion of a DTAWS report, the QPMT agreed to proceed to SSP investigations for all Building 4 sites. The SSP investigations were completed during FY2001. The work plan for the FY2001 SSP investigation (Tetra Tech, 2001c) summarized the results of the DTAWS and SSP investigation for W-01. During an April 10, 2001 site visit, the QPMT agreed that no action was appropriate. A brief decision document (MCBQ IRP Closeout Document No. 12) was signed by the QPMT on November 7, 2001.

A.13.2 W-02—Building 24007 Wash Rack

W-02 is located outside Building 24007 to the west of MCB Route 3 within Training Area 7-B. The site was situated under a roofed area above an eroded concrete surface. The unit discharged washwater, containing non-phosphate biodegradable soap and residual petroleum products.

The site and associated oil/water separator were replaced with a new wash rack and oil/water separator in 1994.

The site was closed out under the DTA phase of the IRP. A DTA investigation was conducted at the site during FY2000. The results of the DTA investigation were presented in DTA Report No. 10 (Tetra Tech, 2000d) and further discussed at an August 29, 2001 meeting, where the QPMT agreed that no action was appropriate. The DTA Report and the signed signature page of the report serve as the brief decision document for the site.

A.13.3 W-03—Building 24009 Wash Rack

This site is located north of Building 24009 to the west of MCB Route 3 within Training Area 7-B. W-03 manages washwater, containing non-phosphate biodegradable soap and residual petroleum products. Washwater from the unit discharges to the settling pit (M-30). No releases were reported at the site.

During the DTA site visit, the site was found to be an active wash rack for cleaning vehicles at the TBS vehicle maintenance facility. No visible evidence of contamination was found.

The site was closed out under the DTA phase of the IRP. A DTA investigation was completed for the site during FY1998. The results of the DTA investigation were presented at a January 17, 2001 meeting, where the QPMT agreed that no action was appropriate. A brief decision document (MCBQ IRP Closeout Document No. 5) was signed by the QPMT on October 3, 2001.

A.13.4 W-04—Sanitary Landfill Wash Rack

This site is located southwest of the Quantico Sanitary Landfill (L-16) within Training Area 8-B in the CER area to the north of MCB Route 2. The wash rack is situated outdoors above a concrete pad and was in good condition during the RFA VSI. This site manages washwater, containing non-phosphate biodegradable soap and residual

petroleum products. Washwater from the unit discharges to an oil/water separator (O-09). No releases have been reported at the site.

The site was closed out under the DTA phase of the IRP. A DTA investigation was conducted at the site during FY2000. The results of the DTA investigation were presented in DTA Report No. 10 (Tetra Tech, 2000d). The QPMT agreed that no action was appropriate. The DTA Report and the signed signature page for the report serve as the brief decision document for the site.

A.13.5 W-05—Building 27954 Wash Rack

This site is located on the west side of Building 27490 on MCB Route 1 in the central portion of the MCBQ on the boundary of Training Areas 8-B and 11B. The concrete wash rack is approximately 30 feet by 20 feet and discharges to the sanitary sewer system (M-02). Until June 1998, the wash rack, which was active during the RFA VSI and the 1994 field inventory, was used to wash automobiles (using nonphosphate biodegradable soap) from the automobile facility located in Academy Building 10. The start-up date for the site is unknown, but is believed to be in the early to mid-1980s.

During a DTA site visit, the water source had been removed, and the site was being used as a parking space. No visible evidence of a release was observed.

The site was closed out under the DTA phase of the IRP. A DTA investigation was conducted at the site during FY2000. The results of the DTA investigation are included in DTA Report No. 9 (Tetra Tech, 2001b). The QPMT agreed that no action was appropriate. The DTA Report and the signed signature page for the report serve as the brief decision document for the site.

A.13.6 W-06—Building 2101 Wash Rack (Site 30)

This site is located north of Building 2101 on Rowell Street within the Marine Corps Air Facility Turner Airfield. The wash rack is located in the center of an asphalt/concrete lot. This site manages washwater containing nonphosphate biodegradable soap and residual petroleum products from the washing of helicopters and helicopter engine parts. The drain at the site was equipped with a manually operated valve, which may direct washwater to the sanitary sewer (M-02) during use and to the storm sewer system (M-01) during periods of nonuse.

During DTAWS and SSP site visits, the asphalt and concrete surrounding the site was in good condition. A new wash rack was constructed at the site in the spring of 1999. W-06 was demolished as part of the new construction.

The site was closed out under the SSP phase of the IRP. A DTA investigation was conducted in FY1998. The results of the DTA investigation were presented in DTA Report No. 2 (Tetra Tech, 1998c). The QPMT agreed to proceed to a DTAWS investigation, which was conducted during FY1999. Prior to the completion of a DTAWS report, the QPMT agreed to proceed to SSP investigations at all Building 2101 sites. The SSP investigations were conducted during FY2001. The results of the SSP investigations were summarized at a July 9, 2002 meeting, where the QPMT agreed that no action was appropriate. A brief decision document (MCBQ IRP Closeout Document No. 22) was signed by the QPMT on July 9, 2002.

A.13.7 W-07—Building 2103 Wash Rack No. 1

This site is located in the southern end of Building 2103, which is located on Barnett Avenue within the Mainside of the MCBQ. The wash rack is located above a concrete surface and has a small floor drain that is connected to the storm sewer system (M-01). The unit managed washwater containing nonphosphate biodegradable soap, natural solvents, and residual petroleum products from military vehicles. An oil/water separator was constructed on the western exterior side of Building 2013 in the early 1990s. W-07 (and W-11) was connected to the oil/water separator at that time.

The site was closed out under the DTAWS phase of the IRP. A DTA investigation was completed for the site during FY2000. The results of the DTA investigation were presented in DTA Report No. 8 (Tetra Tech, 2000c). The QPMT agreed to proceed to a DTAWS investigation, which was conducted during FY2000. The results of the DTAWS investigation were presented at an April 10, 2001 meeting, where the QPMT agreed that no action was appropriate. A brief decision document (MCBQ IRP Closeout Document No. 2) was signed by the QPMT on July 10, 2001.

A.13.8 W-08—Building 663 Wash Rack

This site is located on a concrete pad near the southwest side of Building 663 near Epperson Avenue within the Mainside of the MCBQ. Washwater containing nonphosphate biodegradable soap and residual petroleum products may have been discharged to the sanitary sewer system (M-02). During the RFA VSI, the concrete pad was eroded; releases to the surrounding soil may have occurred.

The wash rack was removed when Building 663 was demolished in early 1995.

The site was closed out under the DTA phase of the IRP. The results of the investigation were presented in DTA Report No. 9 (Tetra Tech, 2001b). The QPMT agreed that no action was appropriate. The DTA Report and the signed signature page for the report serve as the brief decision document for the site.

A.13.9 W-09—Building 28000 Wash Rack

This site is located southeast of Building 28000 north of Buffalo Road within Training Area 2. The unit managed washwater containing nonphosphate biodegradable soap and residual petroleum. The discharge was directed to an oil/water separator (O-05).

During the DTA site visit, the site was no longer in use.

The site was closed out under the DTA phase of the IRP. A DTA investigation was conducted at the site during FY1999. The results of the DTA investigation were presented at March 1, 2001 meeting and further discussed during a May 15, 2001 conference call. The QPMT agreed that no action was appropriate. A brief decision document (MCBQ IRP Closeout Document No. 7) was signed by the QPMT on December 11, 2001.

A.13.10 W-10—Building 3252 Wash Rack

This site is located on an asphalt/concrete surface east of Building 3252 on Range Road within the Mainside of the MCBQ. The unit managed washwater containing nonphosphate biodegradable soap and residual petroleum. Washwater drained over the asphalt pad directly to the surrounding soil and gravel surface east of the unit.

The wash rack is no longer active. During the DTA site visit, no visible evidence of contamination was found.

The site was closed out under the DTAWS phase of the IRP. A DTA investigation was completed at the site during FY2001. The results of the DTA investigation were presented at a May 31, 2001 meeting, where the QPMT agreed to proceed with a DTAWS investigation, which was completed during FY2001. The results of the DTAWS investigation were presented at a December 11, 2001 meeting, where the QPMT agreed that no action was appropriate. A brief decision document (MCBQ IRP Closeout Document No. 8) was signed by the QPMT on January 16, 2002.

A.13.11 W-11—Building 2013 Wash Rack No. 2

This site is located in the northwestern corner of Building 2103, which is located on Barnett Avenue within the Mainside of the MCBQ. The wash rack is located above a concrete surface and has a small floor drain that drained to the storm sewer system (M-01). The unit managed washwater containing nonphosphate biodegradable soap, natural solvents, and residual petroleum products that were generated from washing military vehicles. An oil/water separator was constructed on the western exterior side of Building 2013 in the early 1990s. W-11 (and W-07) was connected to the oil/water separator at that time.

The site was deferred to another regulatory program under the DTAWS phase of the IRP. A DTA investigation was completed for the site during FY2000. The results of the investigation were presented in DTA Report No. 8 (Tetra Tech, 2000c). The QPMT agreed to proceed to a DTAWS investigation, which was conducted during FY2000. The results of the DTAWS investigation were presented at an April 10, 2001 meeting, where the QPMT agreed to defer the site to another regulatory program. Thus, no action under the IRP is required. A brief decision document (MCBQ IRP Deferral Document No. 2) was signed by the QPMT on December 11, 2001.

A.13.12 W-12—Building 3016 Wash Rack

This site is located under a roofed area above a concrete surface west of Building 3016 on Catlin Avenue within the Mainside of the MCBQ. The unit managed washwater containing nonphosphate biodegradable soap and residual petroleum products that were generated from washing military vehicles. Washwater discharges to a concrete trench (T-09). This trench is located midway along the unit. Wastewater generated from W-12 is fully contained and is discharged to the sanitary sewer system (M-02).

No visible evidence of contamination was found during the DTA site visit.

The site was closed out under the DTA phase of the IRP. A DTA investigation was conducted at the site during FY2001. The results of the investigation were presented during an October 3, 2001 meeting, where the QPMT agreed that no action was appropriate. A brief decision document (MCBQ IRP Closeout Document No. 6) was signed by the QPMT on November 8, 2001.

A.13.13 W-13—Building 3045 Wash Rack

This site is located outdoors on a concrete surface northeast of Building 3045 on Barnett Avenue within the Mainside of the MCBQ. The unit managed washwater containing nonphosphate biodegradable soap and residual petroleum products that were generated from washing military vehicles. Washwater drains to the storm sewer system (M-01). During the RFA VSI, the concrete pad was eroded and contained rust-colored stains.

No visible evidence of contamination was found during the 1994 field inventory.

The site was closed out under the DTA phase of the IRP. A DTA investigation was conducted during FY2001. The results of the DTA investigation were presented during an August 29, 2001 meeting, where the QPMT agreed that no action was appropriate. A brief decision document (MCBQ IRP Closeout Document No. 6) was signed by the QPMT on November 8, 2001.

A.13.14 W-14—Building 27002 Wash Rack

This site is located west of Building 27002 south of MCB Route 1 in the CER area within Training Area 8-B. The wash rack is located outside on the remnants of a concrete surface. The unit manages washwater containing nonphosphate biodegradable soap and residual petroleum products that were generated from washing military vehicles. Washwater discharges to the ground surface surrounding the site. There are no collection sumps near the site.

The site was closed out under the DTA phase of the IRP. A DTA investigation was completed at the site during FY2000. The results of the DTA investigation were presented at a July 10, 2001 meeting, where the QPMT agreed that no action was appropriate. A brief decision document (MCBQ IRP Closeout Document No. 6) was signed by the QPMT on November 8, 2001.

A.14 Other Sites

This section presents brief site descriptions of sites that were added to the list of IRP sites by the QPMT during routine partnering meetings. These sites were not included in the FFA (EPA, 1998), RFA, IAS, and other MCBQ historical reports.

A.14.1 Golf Course Maintenance Area (Site 98)

Site 98, which is the Golf Course Maintenance Area located on the Mainside of the MCBQ, was nominated as a site by the QPMT at a January 16, 2001 meeting. The nomination of this area as a DTAWS site was an outgrowth of the DTAWS investigation that was completed for BA-08 (Building 3063 Battery Accumulation Area), which is located within the Golf Course Maintenance Area. Elevated concentrations (i.e., greater than risk-based screening levels) of several inorganic compounds, primarily mercury and zinc, were detected in soil samples collected for BA-08. During an April 12, 2001 site visit, the QPMT agreed that NFA was appropriate for BA-08 since the site history supported that contaminants detected at elevated concentrations were more likely to have originated from handling chemicals used for nuisance and vegetation control (e.g., pesticides, herbicides, fungicides) at the golf course rather than from the small battery accumulation area.

Further investigation of the Golf Course Maintenance Area was considered to be appropriate under a new site designation (Site 98) to determine whether activities conducted in this area have resulted in residual contamination that poses a threat to human health and/or the environment.

The site was closed out under the EE/CA phase of the IRP. A DTAWS investigation was conducted at the site during FY2002. The results of the investigation were presented at a March 5, 2003 QPMT meeting, where the QPMT agreed to proceed to an EE/CA. The results of the EE/CA were presented to EPA Technical Support at an April 29, 2004 meeting. The final EE/CA report (Tetra Tech, 2005d) was submitted to the QPMT on January 21, 2005, and the associated Action Memorandum (NAVFAC, 2005c) was signed on April 15, 2005. A Contractor Closeout Report (Shaw, 2005b) was prepared following the removal action. A brief decision document (MCBQ IRP Closeout Document No. 36) was signed by the QPMT on August 2, 2006. A multiple-site ROD (NAVFAC, 2008), describing the need for NFA following removal action activities at Sites 8, 9, 10, 21, 32, 33, 34, and 98, was signed by MCBQ in August 2008 and by EPA in September 2008.

A.14.2 Creosote Spill Site (Site 97)

Site 97, the Creosote Spill Site, is located within Training Area 5-A of the CER area at the MCBQ. On September 10, 1999 during tree removal operations for the MCBQ fuel farm, a piece of heavy equipment hit an old dip tank near the edge of the clearing, causing approximately 25 gallons of a dense, non-aqueous phase liquid to spill onto the surrounding ground surface. The dense, non-aqueous phase liquid was suspected to be creosote from the dip tank. In January 2000, the dip tanks and the soils impacted by the spill were removed. However, during the removal action, additional impacted soils were discovered 2 to 4.5 feet below ground surface from an earlier spill. The dipping activity that reportedly caused the earlier creosote spill was estimated to have occurred 70 years ago. This determination was made by the MCBQ Forestry Department from the approximate age of trees within the dipping area.

The site was closed out under the SSP phase of the IRP. Following a field investigation (CH2M, 2001) conducted for an EE/CA, the QPMT agreed that no action was appropriate and that the site should be downgraded to an SSP site. The results of the field investigation were presented at a June 6, 2002 meeting, where the QPMT agreed that no action was appropriate. A brief decision document (MCBQ IRP Closeout Document No. 21) was signed by the QPMT on July 12, 2002.

A.14.3 Old Landfill Southern Wetlands (Site 96)

Site 96, the Old Landfill Southern Wetlands, is located on the Mainside of MCBQ near the Old Landfill (Site 4; L-02). As an outgrowth of investigations completed at Site 4, the wetlands were nominated as a site by the QPMT. Site 96 consists of a 1.6-acre tidal, freshwater emergent marsh. Two small streams flow through the wetland --

one originates at a stormwater outfall pipe, which receives runoff from a large portion of the Mainside at the MCBQ, and the second originates at an outfall pipe at Marine Corps Air Facility Turner Airfield. The two streams flow into and receive tidal input from the Quantico Embayment/Potomac River via a small channel.

The site was addressed under the RI/FS phase of the IRP. An RI was originally recommended for Site 96. However, during an October 3, 2001 meeting, the QPMT agreed to proceed with an interim removal action in lieu of the RI. The results of the EE/CA were presented to the QPMT at a May 26, 2004 meeting, where the Team decided that the removal action at Site 96 would be completed in concert with remedial action to be conducted at Site 99 (Quantico Embayment). MCBQ IRP Consensus Agreement No. 8, which documents this decision, was signed at the meeting. For Sites 96 and 99, an FS Report (Battelle and Neptune & Co., 2007) was finalized in 2007, and the ROD (NAVFAC, 2011) was signed by MCBQ and EPA in September 2011.

The selected remedy for Site 96 consisted of the removal and off-site disposal of PCB-contaminated sediment. After the removal action was completed, no LUCs, LTM, and five-year site reviews were required because no hazardous substances, pollutants, or contamination will remain onsite at concentrations greater than levels that would allow unlimited use and unrestricted exposure. The fieldwork for the removal action was completed in July 2014.

A.14.4 Fire Training Area (near Old Batch Plant)

Based on the recollection of a former Base employee, this area was nominated as a site by the QPMT. The former Base employee indicated that he believed that there was a former fire training area near the Old Batch Plant (L-04) on the Mainside of the MCBQ.

During the DTA research activities, no records or other historical information was available to corroborate that there was a former fire training area near L-04.

The site was closed out under the DTA phase of the IRP. A DTA investigation was conducted in FY2002. The results of the DTA investigation were presented at a July 18, 2002 meeting, where the QPMT agreed that no action was appropriate. A brief decision document (MCBQ IRP Closeout Document No. 24) was signed by the QPMT on September 5, 2002.

A.14.5 Larsons Gym Outfall (Storm Sewer Outfall No. 8)

Based on a VDEQ review of storm water evaluation reports for the MCBQ, which identified the outfall as a potential concern for discharge of contamination, this outfall was nominated as a site by the QPMT. This outfall is located to the north of Larsons Gym (Building 2112), which was constructed in 1942 as an airfield maintenance hangar and was used as such from 1942 to 1946. The unit discharged directly to Chopawamsic Creek. Historically, floor washwater, steam condensate, cooling water, and stormwater runoff were discharged to the storm sewer system (M-01).

All discharges from Building 2112 are currently connected to the sanitary sewer system (M-02) and only storm water and infiltrating groundwater are discharged from the outfall. Building 2112 currently has multiple tenants including the HMX-1 maintenance shop, the Marine Corps Moral, Recreation, and Welfare Branch, and associated maintenance.

The site was closed out under the DTAWS phase of the IRP. A DTAWS investigation was conducted at the site during FY1999. The results of the DTAWS investigation were presented at an April 10, 2001 meeting, where the QPMT agreed to further investigate the site under the Quantico Watershed Study. A brief decision document (MCBQ IRP Deferral Document No. 2) was signed by the QPMT on December 11, 2001.

A.14.6 Storm Sewer Outfall No. 16

Based on a VDEQ review of storm water evaluation reports for the MCBQ, which identified the outfall as a potential concern for discharge of contamination, this outfall was nominated as a site by the QPMT. The outfall is located near the Old Landfill (L-02 on the Mainside of the MCBQ) and discharges directly to the Quantico

Embayment/Potomac River. Discharge from the outfall is influenced by steam condensate from various buildings, soil erosion, storm water runoff, cooling water, laundry facilities, and coal stockpile runoff.

The site was closed out under the DTAWS phase of the IRP. The results of the investigation were presented at a December 11, 2001 meeting, where the QPMT agreed to investigate the site under the Quantico Watershed Study. A brief decision document (MCBQ IRP Deferral Document No. 2) was signed by the QPMT on December 11, 2001.

A.14.7 Storm Sewer Outfall No. 30

Based on a VDEQ review of storm water evaluation reports for MCBQ, which identified the outfall as a potential concern for discharge of contamination, this outfall was nominated as a site by the QPMT. The outfall is located near Larsons Gym (Building 2112 on the Mainside of the MCBQ) and discharges directly to the Potomac River. Discharge from the outfall is influenced by steam condensate and floor drains from various buildings, a dumpster area washing area, and storm water runoff. The outfall could potentially have received cleaning solvents from Building 5000 and vehicle maintenance products from Building 2112.

The site was closed out under the DTA phase of the IRP. The results of the investigation were presented at a December 11, 2001 meeting, where the QPMT agreed to investigate the site under the Quantico Watershed Study. A brief decision document (MCBQ IRP Deferral Document No. 1) was signed by the QPMT on December 11, 2001.

A.14.8 Quantico Watershed Study

The QPMT identified the need to evaluate potential releases (and impacts) from various IRP sites to the watersheds at the MCBQ. The focus of the watershed investigation was to evaluate the potential for human health and/or ecological risk associated with chemical releases to the Potomac River from IRP sites at the MCBQ. Portions of this study addressed the Notice of Violation issued by the State, which has resulted in a voluntary ban on fishing. The boundaries of the study included watersheds at MCBQ impacted by RI/FS, SSP, DTAWS, and DTA sites. The study evaluated the impacts of CERCLA sites only; impacts from other non-CERCLA sites will be addressed by other programs at the Base.

The study was conducted in phases and addressed the following watersheds:

- Quantico Embayment
- Chopawamsic Creek
- Quantico Creek / Little Creek
- Potomac River

The investigation of the watersheds followed the standard eight-step ecological risk assessment process, as described by risk assessment guidance for Superfund (EPA, 1997), the Tri-Service guidelines (Wentzel et al., 1996), and Navy policy (Navy, 1999). The technical approach was developed with the QPMT, EPA Region III Biological Technical Assistance Group, and other EPA technical support.

A.14.8.1. Potomac River (Site 101)

The Potomac River portion of the watershed study is Site 101. The site was closed out under the RI/FS phase of the IRP. The fieldwork for the SI was completed in May 2004. The SI Report (Battelle and Neptune & Co., 2005) has been finalized. The QPMT agreed that the lower portion of Site 101 would be addressed during the Site 99 remedial action (MCBQ IRP Closeout Document No. 35). Therefore, a brief decision document (MCBQ IRP Closeout Document No. 35), indicating that no action is appropriate for Site 101, was included in the SI Report.

A.14.8.2. Quantico Creek/Little Creek

The Quantico Creek/Little Creek portion of the watershed study was closed out under the SSP phase of the IRP. The fieldwork for the investigation, which was referred to as a pilot study, was completed in September 2001. The results of the SSP investigation were presented in a risk screening report (Battelle and Neptune & Co., 2002). At a

January 22, 2003 meeting, the QPMT agreed that no action was appropriate. A brief decision document (MCBQ IRP Closeout Document No. 26) was signed by the QPMT on January 22, 2003.

A.14.9 Arsenic Burial Area No. 2

The description for this site is the same as the description for L-06 (Site 17). After investigating several potential locations for the burial area and failing to find the burial area, a no-action ROD (NAVFAC, 2001) was signed for L-06. During field activities for the interim removal action at L-22 (Site 02), the MCBQ Resident Officer in Charge of Construction identified the suspected location of the arsenic burial area. Based on this information, the area was nominated as a site by the QPMT and was named Arsenic Burial Area No. 2.

The site was closed out under the DTAWS phase of the IRP. Based on the results of 2003 field reconnaissance visit, it is questionable whether the area is the arsenic burial area. The arsenic was supposedly disposed at the site in drums. However, a magnetometer failed to detect any metal objects to a depth up to 10 to 15 feet below ground surface. The results of the field reconnaissance were presented to the QPMT at a March 5, 2003 meeting, where the QPMT concluded that the area was not the location of the arsenic burial area. The QPMT agreed that no action was appropriate. A brief decision document (MCBQ IRP Closeout Document No. 30) was signed by the QPMT on July 23, 2003.

The QPMT also agreed that if further information regarding the asbestos burial area was obtained in the future, new locations would be investigated under new site designations.

A.14.10 Asbestos Burial Area No. 2

The description for this site is the same as the description for L-22 (Site 02). After conducting an SSP investigation at L-22, the QPMT agreed to proceed to an interim removal action because of the presence of spent shell casings and burned ordnance. During field activities for the interim removal action at L-22, the MCBQ Resident Officer in Charge of Construction identified the suspected location of the asbestos burial area. Based on this information, the area was nominated as a site by the QPMT and was named Asbestos Burial Area No. 2.

Asbestos Burial Area No. 2 was closed out under the DTAWS phase of the IRP. Based on the results of a field reconnaissance visit, it was determined that there is no asbestos or any other waste disposed at this location. The results of the field reconnaissance were presented to the QPMT at a March 5, 2003 meeting, where the QPMT agreed that no action was appropriate. A brief decision document (MCBQ IRP Closeout Document No. 29) was signed by the QPMT on April 23, 2003.

The QPMT also agreed that if further information regarding the asbestos burial area was obtained in the future, new locations would be investigated under new site designations.

A.14.11 Merrimac Disposal Area

The site (approximately 0.2 acres) is located along the northwestern border of MCBQ near Camp Upshur on the Guadalcanal Area. The site is located in a wooded area and was nominated as a DTAWS site in 2008 after trash was observed during preparations for opening ceremony celebrations at the nearby Merrimac Farms Wildlife Management Area.

During recent site visits, waste, including metal scrap, rusted and partially buried drums with unknown contents, and oil cans were found lying on the ground surface. Some of the waste discovered is related to farming activities (e.g., a discarded manure spreader); therefore, the waste is assumed to have originated from Merrimac Farms, which is now called the Merrimac Farm Wildlife Management Area, located adjacent to the MCBQ Base boundary.

The site was closed out under the DTAWS phase of the IRP. The results of the DTAWS investigation were presented to the QPMT at a July 28, 2010 meeting and further discussed with EPA on a conference call on October 12, 2010. A brief decision document (Closeout Document No. 42), confirming that no action was appropriate, was signed by the QPMT on January 19, 2011.

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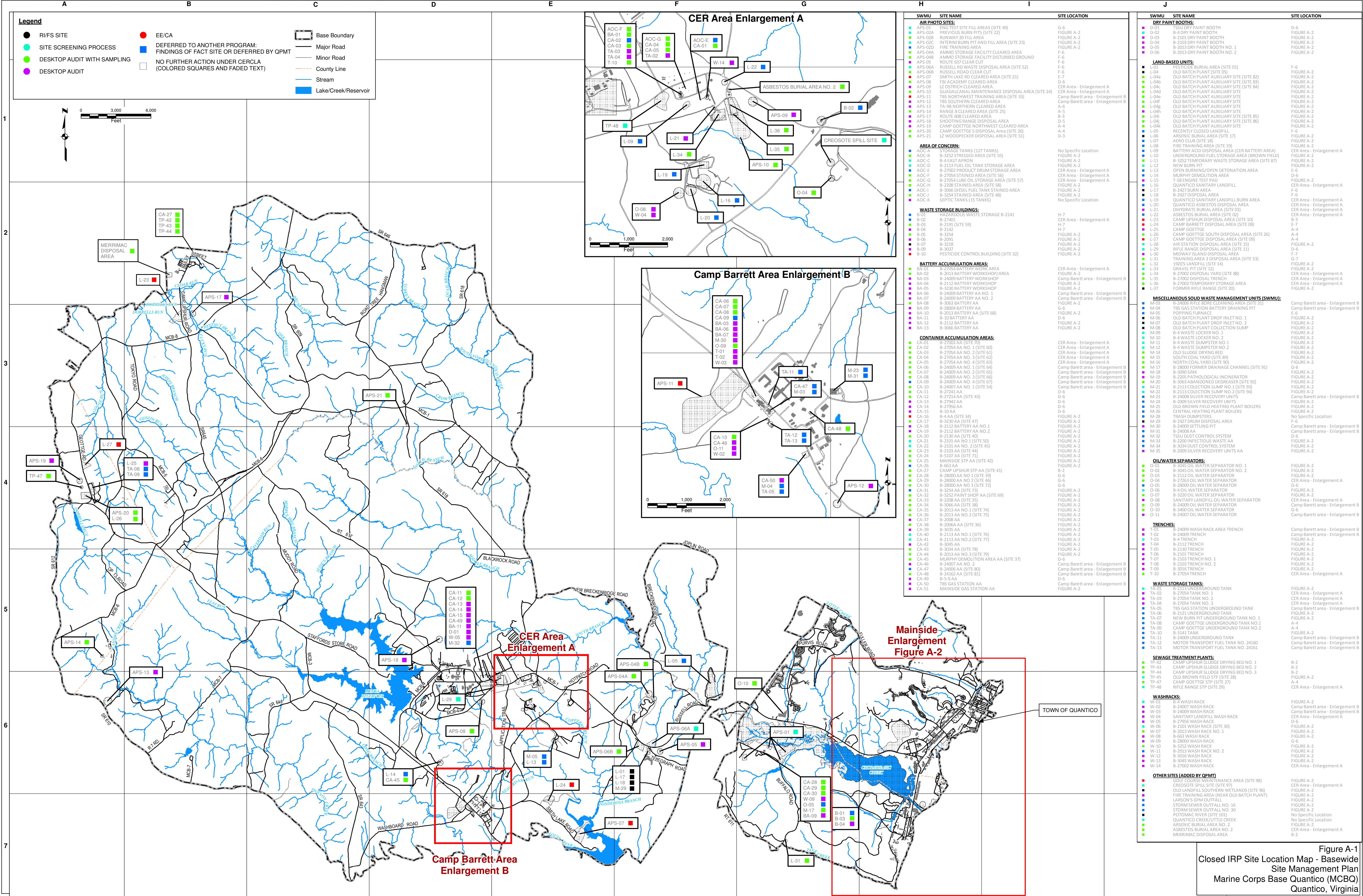
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Closed and Deferred Munition
Response Program Sites

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Figure

B-1 Closed MRP Site Location Map - Mainside

Note: The locations of the closed and deferred MRSs are presented in Figure B-1.

Closed and Deferred Munitions Response Program Sites

This section presents a summary of the closed and deferred munitions response program sites at Marine Corps Base Quantico (MCBQ). A brief description of each munitions response site (MRS) and a statement regarding the status of the MRS are provided.

B.1 UXO 002: 600 Yard Rifle Range South

The MRS is located between Range Road and Catlin Avenue on the Mainside. Firing to the west occurred from the 200-, 300-, 500-, and 600-yard lines. Small arms firing consisted of 0.30 caliber ammunition. The Archive Search Report (ASR) (USACE, 2001) provides documentation indicating that the range was reported to be suitable for machine gun, light mortar, and 37-millimeter (mm) training. The estimated period of use was 1917 to 1952, when a new rifle range complex was completed on the Quad Area.

Remnants of the range are not present at the MRS. Since range closure, the area has been extensively redeveloped and in the 1930s soils from the area were used to fill the airfield (Turner Field). Several roadways and buildings, including the Marine Corps Memorial Chapel, have been constructed at the MRS.

This range was investigated under the Installation Restoration Program (IRP) as part of Site 20 (Former Rifle Range). In 2005, an Interim Removal Action (IRA) was performed at Site 20 (Former Rifle Range), and the site was closed out under the Remedial Investigation (RI)/Feasibility Study (FS) phase of the IRP. A No Further Action (NFA) Record of Decision (ROD) (NAVFAC, 2007) was signed by MCBQ in September 2007 and the United States Environmental Protection Agency (EPA) in October 2007.

The MRS was closed out under the Site Investigation (SI) phase of the Munitions Response Program (MRP). The conceptual site model (CSM) for the MRS was presented at an August 29-30, 2007, Quantico Project Managers Team (QPMT) meeting, where the Team agreed that no action was appropriate. MCBQ MRP Closeout Document No. 3, which addressed several MRSs including unexploded ordnance (UXO) 002, was signed by the QPMT in September 2009.

B.2 UXO 003: 600 Yard Rifle Range North

The MRS is located between Range Road and Catlin Avenue on the Mainside. Firing to the west occurred from the 200-, 300-, 500-, and 600-yard lines. Small arms firing consisted of 0.30-caliber ammunition. The ASR provides documentation indicating that the range was reported to be suitable for machine gun, light mortar, and 37-mm training. The estimated period of use was 1917 to 1952, when a new rifle range complex was completed on the Quad Area.

Remnants of the range are not present at the MRS. Since range closure, the area has been extensively redeveloped and in the 1930s soils from the area were used to fill the airfield (Turner Field). Several buildings, including Lejeune Hall and the Naval Medical Clinic, have been constructed at the MRS.

This range was investigated under the IRP as part of Site 20 (Former Rifle Range). In 2005 an IRA was performed at Site 20, and the site was closed out under the RI/FS phase of the IRP. An NFA ROD (NAVFAC, 2007) was signed by MCBQ in September 2007 and EPA in October 2007.

The MRS was closed out under the SI phase of the MRP. The CSM for the MRP was presented at an August 29-30, 2007, QPMT meeting, where the Team agreed that no action was appropriate. MCBQ MRP Closeout Document No. 3, which addressed several MRSs including UXO 003, was signed by the QPMT in September 2009.

B.3 UXO 004: 1,000 Yard Range

The MRS extends from the Quantico Clubs to the west towards Russell Road and is coincident with UXO 025 (Quantico Clubs MRS). The western border of the UXO 004 abuts the impact area for the 81-mm Mortar Range (UXO 013 A). Small arms (0.30 and 0.50 caliber) training activities, including rifle and machine gun firing, were conducted at this MRS. Also, historical documentation provided in the ASR (USACE, 2001) indicates that the range may have been suitable for grenade and artillery training. Firing to the west occurred from the 800- and 1,000-yard lines. Site plans also depicted a 1,200-yard firing line; however, firing from the 1,200-yard line would have entailed firing from across an access road. The estimated period of use was 1926 to 1952, when the new rifle range complex was completed in the Guad Area.

Remnants of the range are not present at the MRS. Since range closure, the area has been extensively redeveloped. The Quantico Clubs and Crossroads Inn have been constructed in the eastern portion of the MRS.

This range was investigated under the IRP as part of Site 20 (Former Rifle Range). In 2005, an IRA was performed at Site 20, and the site was closed out under the RI/FS phase of the IRP. An NFA ROD (NAVFAC, 2007) was signed by MCBQ in September 2007 and EPA in October 2007.

The MRS was closed out under the SI phase of the MRP. The CSM for the MRS was presented at an August 29-30, 2007, QPMT meeting, where the Team agreed that no action was appropriate. Potential grenade and artillery training activities are being investigated under UXO 025 (Quantico Clubs MRS).

MCBQ MRP Closeout Document No. 3, which addresses several MRSs including UXO 004, was signed by the QPMT in September 2009.

B.4 UXO 005: 0.22 Caliber Anti-Aircraft Range

The MRS encompasses a large portion of Chopawamsic Creek, the estuary located south of Russell Road on the Mainside. It is suspected that the range was planned, but never actually used or constructed.

Although the MRS appears on a historical range map dated 1942, there is no evidence to support the area was used for anti-aircraft training.

The MRP was closed out under the SI phase of the MRP. The CSM for the MRP was presented at an August 29-30, 2007, QPMT meeting, where the Team agreed that no action was appropriate. MCBQ MRP Closeout Document No. 1, which addressed several MRSs including UXO 005, was signed by the QPMT in September 2009.

B.5 UXO 006: 1,000 Inch Landscape Range

The inactive 0.22-caliber range is located within Butler Stadium near McCard Road on the Mainside. The range was small (90 feet long by 40 feet wide) and constructed of a sand base and a backdrop. Firing was directed south at fixed targets placed near a grassy area at the southern wall of the stadium. The estimated period of use was 1938 to 1950.

Remnants of the range were not observed during the 2007 SI site visit. The stadium has been significantly reworked since the 1950s.

The MRS was closed out under the SI phase of the MRP. The SI fieldwork was conducted in spring 2010 (Tetra Tech, 2010a), and the SI Report was finalized in 2011 (Tetra Tech, 2011b). MCBQ MRP Closeout Document No. 8, which documents that no action is appropriate for the MRS, was signed by the QPMT in January 2012.

B.6 UXO 007: FBI Target Range (Former FBI Range)

The MRS, which was investigated as IRP Site 20 (Former Rifle Range), is located south of McCard Road near Argonne Hills on the Mainside. The MRS consists of three pistol ranges, a rifle range, and two skeet ranges. The estimated period of use was the mid-1930s to the mid-1960s.

In 2005, an IRA (consisting primarily of the removal of soil at the impact berms) was performed at Site 20. Following this action, the site was closed out under the RI/FS phase of the IRP. An NFA ROD (NAVFAC, 2007) was signed by MCBQ in September 2007 and EPA in October 2007.

The MRS was closed out under the SI phase of the MRP. The CSM for the MRS was presented at an August 29-30, 2007, QPMT meeting, where the Team agreed that no action was appropriate. MCBQ MRP Closeout Document No. 3, which addressed several MRSs including UXO 007, was signed by the QPMT in September 2009.

B.7 UXO 008: 600 Yard Polo Field Rifle Range

The MRS is located on the Mainside between Range Road and Catlin Avenue and encompasses Russell Road and Dunlap Circle. Firing to the west occurred from the 200-, 300-, 500-, and 600-yard lines. Small arms firing consisted of 0.30 caliber ammunition. The ASR provides documentation indicating that the range was reported to be suitable for machine gun, light mortar, and 37-mm training. The estimated period of use was 1940 to 1952, when a new rifle range complex was completed on the Guad Area.

Remnants of the range are not present at the MRS. Since range closure, the area has been extensively redeveloped and in the 1930s soils from the area were used to fill the airfield (Turner Field). Various roadways and buildings, including Diamond Hall, the Quantico Clubs, and Crossroads Inn, have been constructed at the MRS.

This range was investigated under the IRP as part of Site 20 (Former Rifle Range). In 2005, an IRA was performed at Site 20, and the site was closed out under the RI/FS phase of the IRP. An NFA ROD (NAVFAC, 2007) was signed by MCBQ in September 2007 and EPA in October 2007.

The MRS was closed out under the SI phase of the MRP. The CSM for the MRS was presented at an August 29-30, 2007 QPMT meeting, where the Team agreed that no action was appropriate. MCBQ MRP Closeout Document No. 3, which addressed several MRSs including UXO 008, was signed by the QPMT in September 2009.

B.8 UXO 009: Original Pistol Range

The MRS is an inactive pistol range that was located on the Mainside. Historical aerial photographs verify the location of the range. Firing (0.38 and 0.45 caliber) from 15-, 25-, 50- and 75-yard lines was conducted at fixed targets. The estimated period of use was 1917 to 1931, when the range was razed for the construction of Building 2014.

Remnants of the range were not observed during the 2007 SI site visit. A 0.22-caliber bullet was found in the general vicinity of the MRS; however, the bullet is not believed to be associated with the MRS because of the age of the range and (newer) condition of the bullet. The area was developed when Building 2014 was constructed and remnants of the range were likely removed at that time.

The MRS was closed out under the SI phase of the MRP. A proposed sampling design was presented to the QPMT at an August 14-15, 2007, MRP Subgroup meeting. However, additional research activities were conducted, and a revised CSM was presented at an April 15-16, 2008 QPMT meeting, where the Team agreed that no action was appropriate. MCBQ MRP Closeout Document No. 2, which addressed several MRSs including UXO 009, was signed by the QPMT in November 2009.

B.9 UXO 010: Replacement Pistol Range

The MRS is located north of Catlin Avenue in the area of Building 3044 (Marine Corps Community Services Building). Firing to the west occurred from the 15-, 25-, and 50-yard lines. Historical aerial photographs verify the location of the range. The estimated period of use was 1933 to 1953, when the construction of the pistol ranges in the Guad Area was completed.

Remnants of the range were not observed during the 2007 SI site visit. During the construction of Building 3044, the area was extensively developed.

The MRS was closed out under the SI phase of the MRP. The CSM for the MRS was presented at an August 29-30, 2007 QPMT meeting, where the Team agreed that no action was appropriate. MCBQ MRP Closeout Document No. 2, which addressed several MRSs including UXO 009, was signed by the QPMT in November 2009.

B.10 UXO 011: Machine Gun Range

The MRS is located south of the Marine Corps Exchange near the intersection of Russell and Purvis Roads on the Mainside.

It is suspected that the range was planned, but never actually used or constructed. Although the MRS appears on historical range maps dated 1926 and 1937, there is no evidence to suggest range use. Remnants of the range were not observed during the 2007 SI site visit. Signs of range use were not identified based on a review of historical aerial photographs. Additionally, if the MRS was used as a machine gun range, a large danger zone (of approximately 5,000 to 6,000 yards) would have been needed for this type of firing; this danger zone was not likely established because of the location of nearby power lines and highways.

The MRS was closed out under the SI phase of the MRP. The CSM for the MRS was presented to the QPMT at an August 14-15, 2007, MRP Subgroup meeting, where the Team agreed that no action was appropriate. MCBQ MRP Closeout Document No. 1, which addresses several MRSs including UXO 011, was signed by the QPMT in September 2009.

B.11 UXO 012: Turner Field Skeet Range

The MRS is situated within the northeast quadrant of the Marine Corps Air Facility (also known as Turner Field) on the Mainside. Range activities included shotgun shooting at launched targets (clay pigeons); shooting was directed into the Potomac River. The estimated period of use for the inactive, primarily water-based skeet range was 1943 to the 1960s.

Remnants of the range were not observed during the 2007 SI site visit because the area has been developed to support airfield activities.

The MRS was closed out under the SI phase of the MRP. The SI fieldwork was conducted in spring 2010 (Tetra Tech 2010a), and the SI Report was finalized in 2011 (Tetra Tech, 2011b). MCBQ MRP Closeout Document No. 8, which documents that no action is appropriate for the MRS, was signed by the QPMT in January 2012.

B.12 UXOs 014, 015, 016, and 017: Marine Corps Flying Field Bombing Targets

These MRSs includes former UXO sites UXO 014 through UXO 017. These MRSs were closed out and later reopened for further investigation under UXO 018 following discovery of munitions during at Marine Corps Flying Field Bombing Target No. 1 and Marine Corps Flying Field Bombing Target No. 5.

B.13 UXO 020: Artillery Range

This MRS is coincident with UXO 013 (81-mm Mortar Range). The MRS was closed out under the SI phase of the MRP. Training activities associated with UXO 020 are being investigated under UXO 013 (81-mm Mortar Range); therefore, this UXO was closed out under the MRP. MCBQ MRP Closeout Document No. 5 was signed by the QPMT in November 2009.

B.14 UXO 022: Aviation Bombing Range

The MRS is located in the Engineers Test Area, an active training area of the MCBQ. The range, which was identified in the ASR, is depicted on a 1942 range map. Aerial photographs from this timeframe show ground scars

present in this area. No written documentation on the munitions used at the MRS was discovered during ASR research activities; however, the ASR (USACE, 2001) suggests that smoke bombs were likely used.

Because the MRS is located within the boundaries of an operational range and is not eligible currently for MRP funding, actions at the MRS have been deferred until the range is closed or transferred. MCBQ MRP Consensus Agreement No. 1 was signed by the QPMT to document this decision.

B.15 UXO 023: Aircraft Artillery Spotting Range

The MRS is in the Engineers Test Area, an active training area of the MCBQ. The range, which was identified in the ASR, is depicted on a 1942 range map. Aerial photographs from this timeframe show ground scars present in this area. No written documentation on the use of the range or munitions types was discovered during ASR research activities; however, the ASR (USACE, 2001) states that the range may have been used in conjunction with the Aviation Bombing Range (UXO 022).

Because the MRS is located within the boundaries of an operational range and is not eligible currently for MRP funding, actions at the MRS have been deferred until the range is closed or transferred. MCBQ MRP Consensus Agreement No. 1 was signed by the QPMT to document this decision.

B.16 UXO 027: Potomac River Firing Range

The MRS is an inactive artillery range located within the Potomac River where 37-mm, 75-mm, and 155-mm artillery were fired at fixed and moving targets in the river. The established danger zone for the MRS was from Shipping Point, Virginia to Marlborough Point, Virginia/Maryland Point, Maryland. This danger zone for the MRS was established in 1934, and regulations were published in the 1938 edition of the U.S. Code of Federal Regulations. The regulations were revoked in 1948. Therefore, the estimate period of use for the MRS was 1934 to 1943, when the purchase of the Guad Area solved the limited real estate issues at the MCBQ.

Firing was limited to 4 months out of the year (June 16 to October 14). Based on Virginia Law at this time, which prevented the firing of live bombs in the river, sand-loaded munitions (for example, practice rounds) were likely used. Although a suspected firing point location is the Marine Corps Air Facility, the specific locations of firing points and targets are not known.

One warning (public) notice was discovered indicating that the range was used. The warning notice advised that 37-mm sub-caliber firing at a towed target on the Potomac River would be conducted from September 14-16, 1937. No other information was discovered regarding range use.

The MRS was closed out under the SI phase of the MRP. The CSM for the MRS was presented to the QPMT at an April 16-17, 2008 QPMT meeting; however, the Team was unable to reach consensus on the path forward. Further research activities were conducted and the CSM was updated and presented at an October 29-30, 2008, QPMT meeting, where the Team agreed that no action was appropriate. Because the MRS is located within Maryland waters, concurrence from the Maryland Department of the Environment was obtained before proceeding with site closure. MCBQ MRP Closeout Document No. 4 was signed by the Team in September 2009.

B.17 UXO 029: Chopawamsic Creek Skeet Range No. 2

The MRS is located along the bank of Chopawamsic Creek and extends out into the creek. The QPMT agreed to include this range as an MRS at a July 16-17, 2008, QPMT meeting because the MRS had not been identified during the ASR activities. Range activities included shotgun shooting at launched targets (clay pigeons).

This range was investigated as part of IRP Site 100 (Chopawamsic Creek). A ROD for Site 100 (NAVFAC, 2011b) was signed by the MCBQ and EPA in September 2011. The selected remedy for the portion of Site 100 that includes UXO 029 is monitored natural recovery. LUCs, LTM, and five-year site reviews will also be conducted for this area.

The MRS was closed out under the SI phase of the MRP. The CSM for the MRS was presented at a January 14-15, 2009 QPMT meeting, where the Team agreed that no action was appropriate. MCBQ MRP Closeout Document No. 4, which addressed several MRSs including UXO 029, was signed by the QPMT in September 2009.

B.18 UXO 030: Bore Sighting Range

The MRS originates in the northern part of the Marine Corps Air Facility and extends over the Potomac River in a southeastern direction. It is suspected that the range was planned, but never actually used or constructed. Although the MRS appears on a historical range map dated 1942, there is no evidence to support the area was used for this type of training. No documentation of range use was identified during the SI research activities.

The MRS was closed out under the SI phase of the MRP. The CSM for the MRS was presented at an August 29-30, 2007, QPMT meeting, where the Team tentatively agreed that no action was appropriate. The Maryland Department of the Environment concurred with this decision. MCBQ MRP Closeout Document No. 6, which documents the no action decision, was signed by the QPMT in July 2010.

B.19 UXO 031: Camp Barrett Training Areas 5 And 8

This MRS, which is located within the Guad Area, was added to the MCBQ MRP in 2010 because this area no longer meets the definition of an operational range and the ASR (USACE, 2001) identified that this area was a former training area. Currently, The Basic School is located at the MRS and more than 90 percent of the MRS has been developed.

Although the MRS was located within former Training Area C, which was designated for mortar and grenade use, no documentation of range use was identified for the MRS during SI research activities. The MRS is located well outside of the original 15 ranges in the Guad Area (acquisition of the Guad Area occurred in 1943) and a review of aerial photography supports the presence of existing buildings at the MRS by 1946.

The MRS is being addressed under the SI phase of the MRP. The CSM developed for the MRS was presented at a February 15, 2011 QPMT meeting, where no action was recommended. In August 2011, the QPMT initially agreed to no further action; however, the recommendation for no further action was rescinded when munitions were found near the MRS during base construction activities of parking lots P546 and P565. The boundaries of UXO 031 were going to be temporarily expanded to allow for MRP funding for munitions response in support of the military construction (MILCON) parking lot projects; however, the munitions response actions were ultimately funded by MILCON and the UXO 031 boundaries were not expanded. Parking lot areas P546 and P565 are part of operational range and not currently eligible for the MRP. MCBQ MRP Closeout Document No. 10, which documents the no action decision, was signed by the QPMT in September 2016.

B.20 UXO 032: Camp Upshur Training Area 17

This MRS, which is located within the Guad Area, was added to the MCBQ MRP in 2010. The MRS was added because this area no longer meets the definition of an operational range and the ASR identified that this area was a former training area. Camp Upshur is currently located at the MRS.

The MRS was located within former Training Area G, which was designated for field training and maneuvering (non-live fire). No documentation of range use was identified for the MRS during SI research activities. The MRS is located well outside of the original 15 ranges in the Guad Area and establishment of Camp Upshur reportedly began in 1943 with the acquisition of the Guad Area.

The MRS was closed out under the SI phase of the MRP. The CSM for the MRS was presented at a February 15, 2011 QPMT meeting, where no action was recommended. MCBQ MRP Closeout Document No. 7, which documents the no action decision, was signed by the QPMT in April 2012.

B.21 References

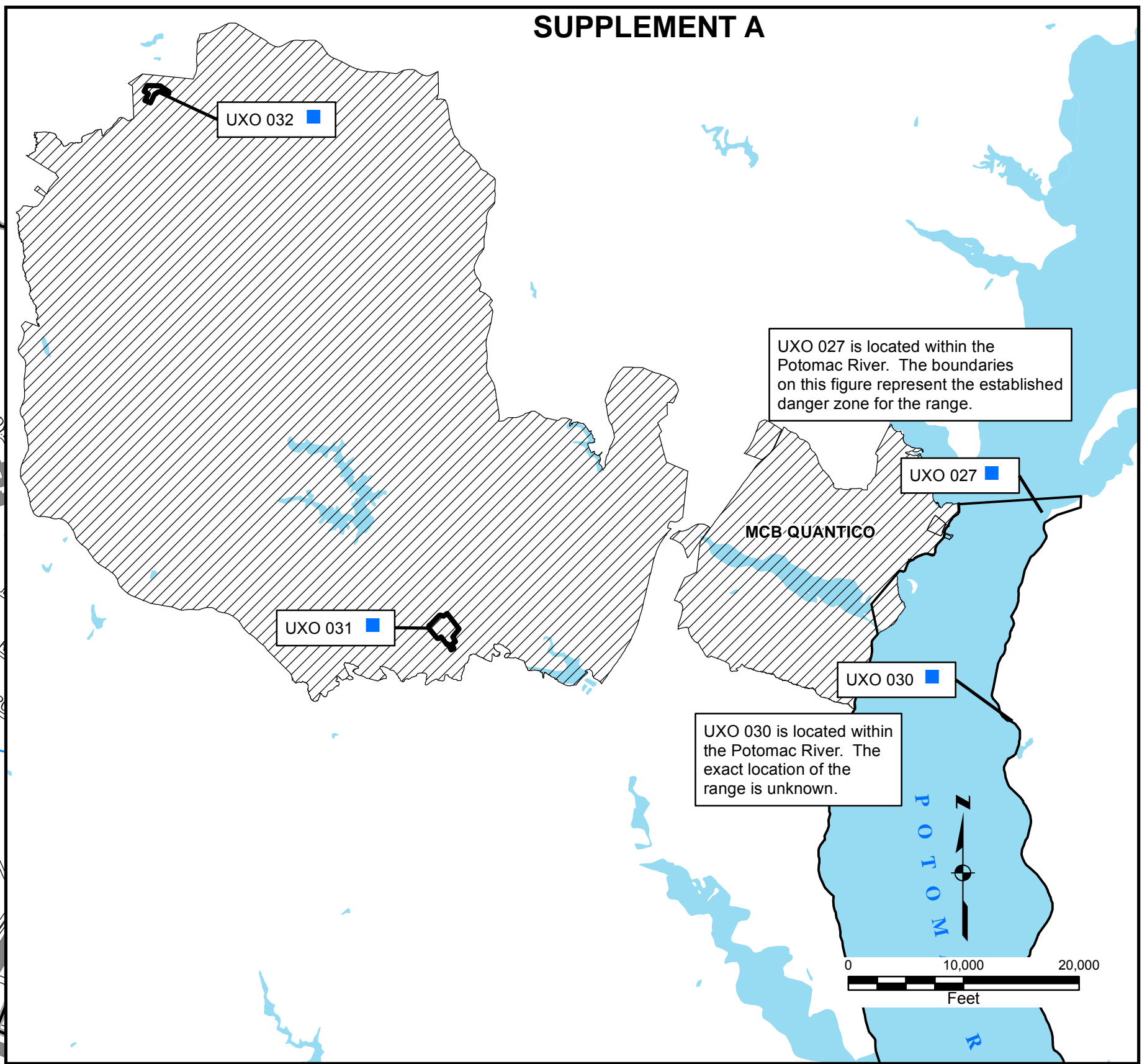
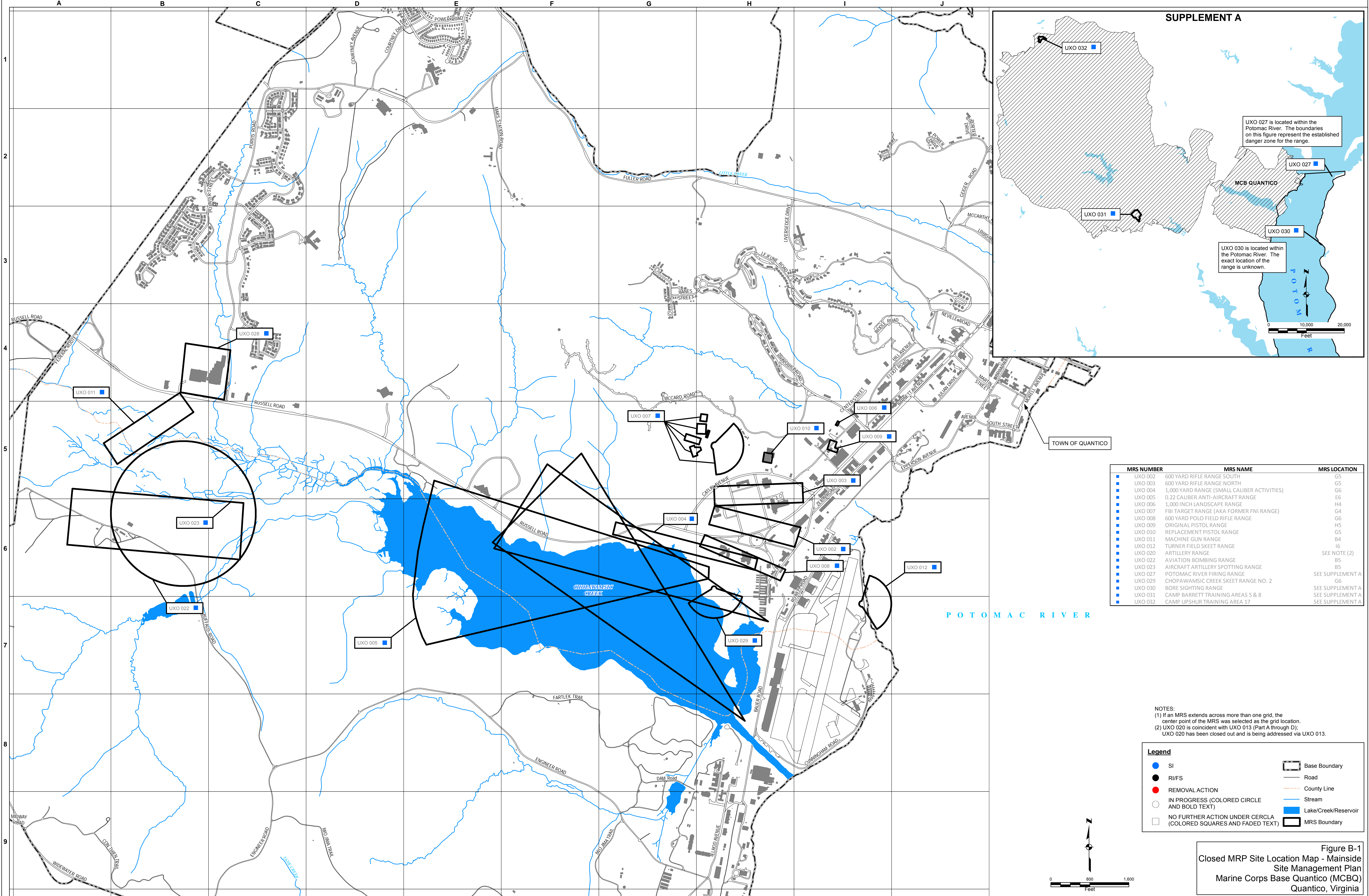
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Figure



MRS NUMBER	MRS NAME	MRS LOCATION
UXO 002	600 YARD RIFLE RANGE SOUTH	G5
UXO 003	600 YARD RIFLE RANGE NORTH	G5
UXO 004	1,000 YARD RANGE (SMALL CALIBER ACTIVITIES)	G6
UXO 005	0.22 CALIBER ANTI-AIRCRAFT RANGE	E6
UXO 006	1,000 INCH LANDSCAPE RANGE	H4
UXO 007	FBI TARGET RANGE (AKA FORMER FNI RANGE)	G4
UXO 008	600 YARD POLO FIELD RIFLE RANGE	G6
UXO 009	ORIGINAL PISTOL RANGE	H5
UXO 010	REPLACEMENT PISTOL RANGE	G5
UXO 011	MACHINE GUN RANGE	B4
UXO 012	TURNER FIELD SKEET RANGE	I6
UXO 020	ARTILLERY RANGE	SEE NOTE (2)
UXO 022	AVIATION BOMBING RANGE	B5
UXO 023	AIRCRAFT ARTILLERY SPOTTING RANGE	B5
UXO 027	POTOMAC RIVER FIRING RANGE	SEE SUPPLEMENT A
UXO 029	CHOPAWAMSIK CREEK SKEET RANGE NO. 2	G6
UXO 030	BORE SIGHTING RANGE	SEE SUPPLEMENT A
UXO 031	CAMP BARRETT TRAINING AREAS 5 & 8	SEE SUPPLEMENT A
UXO 032	CAMP UPSHUR TRAINING AREA T7	SEE SUPPLEMENT A

NOTES:
(1) If an MRS extends across more than one grid, the center point of the MRS was selected as the grid location.
(2) UXO 020 is coincident with UXO 013 (Part A through D); UXO 020 has been closed out and is being addressed via UXO 013.

Legend	
● SI	Base Boundary
● RI/FS	Road
● REMOVAL ACTION	County Line
○ IN PROGRESS (COLORED CIRCLE AND BOLD TEXT)	Stream
□ NO FURTHER ACTION UNDER CERCLA (COLORED SQUARES AND FADED TEXT)	Lake/Creek/Reservoir
	MRS Boundary

Appendix C

Hazard Ranking System Scoring for
Installation Restoration Program Sites

Appendix C
Installation Restoration Program Sites Scoring, 1995-1996 Site Management Plan
Marine Corps Base Quantico, Quantico, Virginia

SITE DESIGNATION		SITE NAME	Observed	Accessibility	Contaminant	Waste	Targets	TOTAL
IR (IAS)	SWMU (EPIC/RFA)		Release (0/45)		Transport (1-5)	Characteristics (1-5)		SCORE
-	APS-1	ENGINEERING TEST SITE FILL AREAS	45	2	5	4	2	32.0
-	APS-2A	PREVIOUS BURN PITS	45	3	3	4	3	48.0
-	APS-2B	RUNWAY 20 FILL AREA	0	1	3	3	5	12.0
-	APS-2C	INTERIM BURN PIT AND FILL AREA	45	1	3	4	2	32.0
-	APS-3A	CEMETERY MAINTENANCE STORAGE AREA	0	2	4	5	3	32.0
-	APS-3B	CEMETERY MAINTENANCE DISPOSAL AREA	0	2	5	5	2	26.7
-	APS-3C	CEMETERY SOIL STORAGE AREA	0	2	1	1	1	0.5
-	APS-4A	AMMO STORAGE FACILITY CLEARED AREA	0	2	5	3	2	16.0
-	APS-4B	AMMO STORAGE FACILITY DISTURBED GROUND	0	2	5	3	2	16.0
-	APS-5	Rt. 637 CLEAR CUT	0	2	1	1	2	1.1
-	APS-6A	RUSSELL ROAD WASTE DISPOSAL AREA	0	2	5	5	2	26.7
-	APS-6B	RUSSELL ROAD CLEAR CUT	0	2	1	1	2	1.1
-	APS-7	SMITH LAKE ROAD CLEARED AREA	0	3	3	3	3	21.6
-	APS-8	FBI ACADEMY CLEARED AREA	0	1	3	3	2	4.8
-	APS-9	LZ OSTRICH CLEARED AREA	0	2	3	3	2	9.6
-	APS-10	GUAD MAINTENANCE DISPOSAL AREA	0	2	3	4	2	12.8
-	APS-11	TBS NORTHWEST TRAINING AREA	0	2	3	4	4	25.6
-	APS-12	TBS SOUTHERN CLEARED AREA	0	2	3	3	2	9.6
-	APS-13	TA-9B NORTHERN CLEARED AREA	0	1	3	3	2	4.8
-	APS-14	TA-9B SOUTHERN CLEARED AREA	0	1	3	3	2	4.8
-	APS-17	Rt. 608 CLEARED AREA	0	2	3	3	3	14.4
-	APS-18	SHOOTING RANGE DISPOSAL AREA	0	1	3	5	2	8.0
-	APS-19	CAMP GOETTGE NORTHWEST CLEARED AREA	0	1	3	2	1	1.6
-	APS-21	Rt. 619 DISPOSAL AREA	0	1	4	4	2	8.5
-	AOC-A	STORAGE TANKS (127)	0	2	2	4	2	8.5
-	AOC-B	B-3252 STRESSED AREA	45	2	5	3	3	36.0
-	AOC-C	B-4 EAST APRON	45	1	1	2	2	16.0
-	AOC-D	B-2113 FUEL OIL TANK STORAGE AREA	45	1	3	2	2	16.0
-	AOC-E	B-27002 PRODUCT DRUM STORAGE AREA	45	1	5	2	2	16.0
-	AOC-F	B-27054 STAINED AREA	45	1	5	2	2	16.0
-	AOC-G	B-27054 LUBE OIL STORAGE AREA	45	1	5	2	2	16.0
-	AOC-H	B-2208 STAINED AREA	45	2	5	3	3	36.0
-	AOC-I	B-3066 DIESEL FUEL TANK STAINED AREA	45	2	5	2	4	32.0
-	AOC-J	B-3254 STAINED AREA	45	1	5	3	4	48.0
-	AOC-K	SEPTIC TANKS	0	1	2	2	2	2.1
-	B-1	HAZARDOUS WASTE STORAGE BUILDING 2141	0	1	1	5	2	2.7
-	B-2	B-27401	0	1	1	5	1	1.3
-	B-3	B-2191	0	1	2	5	2	5.3
-	B-4	B-2142	0	1	2	5	2	5.3
-	B-5	B-3254	0	1	2	3	4	6.4
-	B-6	B-2091	0	1	2	2	2	2.1

Appendix C
Installation Restoration Program Sites Scoring, 1995-1996 Site Management Plan
Marine Corps Base Quantico, Quantico, Virginia

SITE DESIGNATION		SITE NAME	Observed	Accessibility	Contaminant	Waste	Targets	TOTAL
IR (IAS)	SWMU (EPIC/RFA)		Release (0/45)		Transport (1-5)	Characteristics (1-5)		SCORE
-	B-7	B-3218	45	2	2	5	2	40.0
-	B-8	B-669	0	1	2	5	3	8.0
-	B-9	B-3037	0	1	1	5	3	4.0
-	BA-1	B-27054 BATTERY WORK AREA	0	1	4	5	3	16.0
-	BA-2	B-2013 BATTERY WORKSHOP/AREA	0	1	4	5	3	16.0
-	BA-3	B-24009 BATTERY WORKSHOP	0	1	2	5	2	5.3
-	BA-4	B-2112 BATTERY WORKSHOP	0	1	2	5	2	5.3
-	BA-5	B-3230 BATTERY WORKSHOP	0	1	2	5	2	5.3
-	BA-6	B-24009 BATTERY ACCUM. AREA NO.1	0	1	3	5	2	8.0
-	BA-7	B-24009 BATTERY ACCUM. AREA NO.2	0	1	3	5	2	8.0
-	BA-8	B-3063 BATTERY ACCUM. AREA	0	2	4	5	3	32.0
-	BA-9	B-28004 BATTERY ACCUM. AREA	0	1	4	5	3	16.0
-	BA-10	B-2013 BATTERY ACCUM. AREA	0	2	4	5	3	32.0
-	BA-11	B-10 BATTERY ACCUM. AREA	0	1	2	5	3	8.0
-	BA-12	B-2112 BATTERY ACCUM. AREA	0	1	2	5	3	8.0
-	BA-13	B-3066 BATTERY ACCUM. AREA	0	2	3	5	3	24.0
-	CA-1	B-27002 AA	0	1	4	3	3	9.6
-	CA-2	B-27054 AA NO.1	45	1	4	3	3	36.0
-	CA-3	B-24054 AA NO.2	45	1	4	5	3	60.0
-	CA-4	B-24054 AA NO.3	45	1	4	5	3	60.0
-	CA-5	B-24054 AA NO.4	45	1	4	3	3	36.0
-	CA-6	B-24009 AA NO.1	45	1	4	2	3	24.0
-	CA-7	B-24009 AA NO.2	0	1	2	5	4	10.7
-	CA-8	B-24009 AA NO.3	0	1	2	3	4	6.4
-	CA-9	B-24009 AA NO.4	45	1	4	2	4	32.0
-	CA-10	B-24007 AA NO.1	45	2	4	2	3	24.0
-	CA-11	B-27241 AA	0	1	1	5	4	5.3
-	CA-12	B-27214 AA	45	2	4	3	3	36.0
-	CA-13	B-27942 AA	0	1	1	5	1	1.3
-	CA-14	B-27956 AA	0	1	2	3	2	3.2
-	CA-15	B-10 AA	0	1	2	2	4	4.3
-	CA-16	B-4 AA	45	1	3	2	3	24.0
-	CA-17	B-3230 AA	45	1	3	4	3	48.0
-	CA-18	B-2112 AA NO.1	0	1	2	5	3	8.0
-	CA-19	B-2112 AA NO.2	0	1	1	5	2	2.7
-	CA-20	B-2130 AA	45	1	4	5	3	60.0
-	CA-21	B-2101 AA NO.1	0	1	1	5	2	2.7
-	CA-22	B-2101 AA NO.2	45	1	4	5	2	40.0
-	CA-23	B-2103 AA	0	1	4	5	2	10.7
-	CA-24	B-5107 AA	0	2	4	4	3	25.6
-	CA-25	MAINSIDE STP AA	45	1	4	5	3	60.0

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Marine Corps Base Quantico, Quantico, Virginia

SITE DESIGNATION		SITE NAME	Observed	Accessibility	Contaminant	Waste	Targets	TOTAL
IR (IAS)	SWMU (EPIC/RFA)		Release (0/45)		Transport (1-5)	Characteristics (1-5)		SCORE
-	CA-26	B-663 AA	0	2	2	1	3	3.2
-	CA-27	CAMP UPSHUR STP AA	45	1	4	3	3	36.0
-	CA-28	B-28000 AA NO.1	45	1	3	5	3	60.0
-	CA-29	B-28000 AA NO.2	45	1	4	4	3	48.0
-	CA-30	B-28000 AA NO.3	0	1	4	5	3	16.0
-	CA-31	B-3254 AA	45	1	4	3	4	48.0
-	CA-32	B-3252 PAINT SHOP AA	0	1	2	5	4	10.7
-	CA-33	B-2208 AA	45	2	3	3	3	36.0
-	CA-34	B-3066 AA	45	2	3	5	3	60.0
-	CA-35	B-2013 AA NO.1	45	2	3	5	3	60.0
-	CA-36	B-2013 AA NO.2	45	1	3	3	3	36.0
-	CA-37	B-2008 AA	0	2	2	4	3	12.8
-	CA-38	B-2006A AA	45	2	3	5	3	60.0
-	CA-39	B-3035 AA	0	2	1	5	4	10.7
-	CA-40	B-2113 AA NO.1	45	1	4	3	3	36.0
-	CA-41	B-2113 AA NO.2	0	1	4	2	3	6.4
-	CA-42	B-3045 AA	0	2	2	5	2	10.7
-	CA-43	B-3034 AA	45	2	3	5	3	60.0
-	CA-44	B-2013 AA NO.3	0	1	2	5	2	5.3
-	CA-45	MURPHY DEMOLITION AREA AA	45	1	4	5	2	40.0
-	CA-46	B-24007 AA NO.2	0	2	2	3	3	9.6
-	CA-47	B-24006 AA	45	2	4	3	4	48.0
-	CA-48	B-24162	45	2	4	2	4	32.0
-	CA-49	B-5-9 AA	0	1	3	2	3	4.8
-	CA-50	TBS GAS STATION AA	0	1	2	3	1	1.6
-	CA-51	MAINSIDE GAS STATION AA	0	1	2	2	4	4.3
-	D-1	TSSU DRY PAINT BOOTH	0	1	2	3	3	4.8
-	D-2	B-4 DRY PAINT BOOTH	0	1	2	3	3	4.8
-	D-3	B-2101 DRY PAINT BOOTH	0	1	2	3	3	4.8
-	D-4	B-2103 DRY PAINT BOOTH	0	1	2	3	3	4.8
-	D-5	B-2013 DRY PAINT BOOTH NO.1	0	1	2	3	3	4.8
-	D-6	B-2013 DRY PAINT BOOTH NO.2	0	1	2	3	3	4.8
1	L-1	PESTICIDE BURIAL AREA	45	1	2	5	2	40.0
4	L-2	OLD LANDFILL	45	2	4	5	5	100.0
-	L-3	DRMO SCRAPYARD	0	2	4	5	2	21.3
5	L-4	OLD BATCH PLANT	45	2	3	4	2	32.0
5	L-4a	OLD BATCH PLANT AUXILLARY SITES	45	2	3	5	2	40.0
7	L-5	RECENTLY CLOSED LANDFILL	45	1	4	5	3	60.0
17	L-6	ARSENIC BURIAL AREA	45	1	3	5	2	40.0
-	L-7	AERO CLUB	45	2	3	4	2	32.0
-	L-8	FIRE TRAINING AREA / APS-2D	45	2	4	5	3	60.0

Appendix C
Installation Restoration Program Sites Scoring, 1995-1996 Site Management Plan
Marine Corps Base Quantico, Quantico, Virginia

SITE DESIGNATION		SITE NAME	Observed	Accessibility	Contaminant	Waste	Targets	TOTAL
IR (IAS)	SWMU (EPIC/RFA)		Release (0/45)		Transport (1-5)	Characteristics (1-5)		SCORE
13	L-9	BATTERY ACID DISPOSAL AREA	45	1	2	5	2	40.0
6	L-10	UNDERGROUND FUEL STORAGE AREA	45	2	4	5	3	60.0
-	L-11	B-3252 TEMPORARY WASTE STORAGE AREA	45	1	4	5	3	60.0
-	L-12	NEW BURN PIT	45	1	4	2	2	16.0
-	L-13	OPEN BURNING/OPEN DETONATION AREA	45	1	3	3	2	24.0
-	L-14	MURPHY DEMOLITION AREA	45	1	5	5	2	40.0
-	L-15	T-58 ENGINE TEST PAD	45	1	2	1	2	8.0
-	L-16	QUANTICO SANITARY LANDFILL	45	1	3	5	2	40.0
-	L-17	B-2427 BURN AREA	45	2	4	2	2	16.0
-	L-18	B-2427 DISPOSAL AREA	0	2	4	3	2	12.8
-	L-19	QUANTICO SANITARY LANDFILL BURN AREA	45	1	3	1	1	4.0
-	L-20	QUANTICO ASBESTOS DISPOSAL AREA	0	1	2	5	1	2.7
3	L-21	DIHYDRATE BURIAL AREA	45	1	5	2	2	16.0
2	L-22	ASBESTOS BURIAL AREA	45	1	2	5	1	20.0
10	L-23	CAMP UPSHUR DISPOSAL AREA	45	2	5	3	2	24.0
8	L-24	CAMP BARRETT DISPOSAL AREA	45	2	5	3	2	24.0
-	L-25	CAMP GOETTGE	0	1	3	2	1	1.6
-	L-26	CAMP GOETTGE SOUTH DISPOSAL AREA / APS-20	0	1	3	2	1	1.6
9	L-27	CAMP GOETTGE DISPOSAL AREA	45	1	5	3	1	12.0
15	L-28	AIR STATION DISPOSAL AREA	45	2	5	1	4	16.0
11	L-29	RIFLE RANGE DISPOSAL AREA	45	2	3	2	2	16.0
16	L-30	MIDWAY ISLAND DISPOSAL AREA	45	1	5	1	1	4.0
-	L-31	TRAINING AREA 3 DISPOSAL AREA	45	1	5	3	3	36.0
14	L-32	1920s LANDFILL	45	2	5	2	3	24.0
12	L-33	GRAVEL PIT	45	1	5	2	3	24.0
-	L-34	B-27002 DISPOSAL YARD	45	1	5	2	2	16.0
-	L-35	B-27002 DISPOSAL TRENCH	45	1	5	2	2	16.0
-	L-36	B-27002 TEMPORARY STORAGE AREA	45	1	5	4	3	48.0
-	M-1	STORM SEWER SYSTEM	45	3	5	2	5	40.0
-	M-2	SANITARY SEWER SYSTEM	45	1	2	3	1	12.0
-	M-3	B-24006 RIFLE BORE CLEANING AREA	45	1	4	5	4	80.0
-	M-4	TBS GAS STATION BATTERY DRAINING PIT	45	2	2	5	2	40.0
-	M-5	POPPING FURNACE	45	1	4	2	2	16.0
-	M-6	OLD BATCH PLANT DROP INLET NO.1	0	2	4	5	4	42.7
-	M-8	OLD BATCH PLANT COLLECTION SUMP	0	1	1	5	1	1.3
-	M-7	OLD BATCH PLANT DROP INLET NO.2	0	2	4	5	4	42.7
-	M-9	B-4 WASTE LOCKER NO.1	45	1	4	3	3	36.0
-	M-10	B-4 WASTE LOCKER NO.2	45	1	4	3	3	36.0
-	M-11	B-4 WASTE DUMPSTER NO.1	45	2	4	2	3	24.0
-	M-12	B-4 WASTE DUMPSTER NO.2	45	2	4	2	3	24.0
-	M-13	B-2113 UG TANK LOADING/UNLOADING AREA	45	2	3	4	2	32.0

Appendix C
Installation Restoration Program Sites Scoring, 1995-1996 Site Management Plan
Marine Corps Base Quantico, Quantico, Virginia

SITE DESIGNATION		SITE NAME	Observed	Accessibility (1-3)	Contaminant	Waste	Targets (1-5)	TOTAL
IR (IAS)	SWMU (EPIC/RFA)		Release (0/45)		Transport (1-5)	Characteristics (1-5)		SCORE
-	M-14	OLD SLUDGE DRYING BED	45	1	4	2	2	16.0
-	M-15	SOUTH COAL YARD	45	1	3	2	3	24.0
-	M-16	NORTH COAL YARD	45	1	3	2	3	24.0
-	M-17	B-28000 FORMER DRAINAGE CHANNEL	45	1	2	3	2	24.0
-	M-18	B-3090 SINK	0	1	2	5	2	5.3
-	M-19	B-2205 PATHOLOGICAL INCINERATOR	0	1	2	3	1	1.6
-	M-20	B-3063 ABANDONED DEGREASER	45	2	2	5	2	40.0
-	M-21	B-2113 COLLECTION SUMP NO.1	45	1	3	2	1	8.0
-	M-22	B-2113 COLLECTION SUMP NO.2	45	1	3	2	1	8.0
-	M-23	B-24008 SILVER RECOVERY UNITS	0	1	1	3	2	1.6
-	M-24	B-2009 SILVER RECOVERY UNITS	0	1	1	3	2	1.6
-	M-25	OLD BROWN FIELD HEATING PLANT BOILERS	0	1	2	2	2	2.1
-	M-26	CENTRAL HEATING PLANT BOILERS	0	1	2	2	2	2.1
-	M-27	B-2101 PAINT BOOTH SUMP	0	1	2	3	1	1.6
-	M-28	TRASH DUMPSTERS	0	3	1	1	2	1.6
-	M-29	B-2427 DRUM DISPOSAL AREA	0	2	2	5	2	10.7
-	M-30	B-24009 SETTLING PIT	0	1	3	2	3	4.8
-	M-31	B-24008 ACCUMULATION AREA	0	1	2	5	1	2.7
-	M-32	TSSU DUST CONTROL SYSTEM	0	1	2	1	4	2.1
-	M-33	B-2200 INFECTIOUS WASTE ACCUM. AREA	0	1	1	5	1	1.3
-	M-34	B-3034 DUST CONTROL SYSTEM	0	1	2	1	4	2.1
-	M-35	B-2009 SILVER RECOVERY UNITS ACCUM. AREA	0	1	1	3	2	1.6
-	O-1	B-3045 O/W SEPARATOR NO.1	45	1	3	3	2	24.0
-	O-2	B-3045 O/W SEPARATOR NO.2	45	1	3	3	2	24.0
-	O-3	B-2112 O/W SEPARATOR	45	1	3	3	3	36.0
-	O-4	B-27263 O/W SEPARATOR	45	1	3	3	3	36.0
-	O-5	B-28000 O/W SEPARATOR	45	1	4	3	2	24.0
-	O-6	B-4 O/W SEPARATOR	45	1	3	3	3	36.0
-	O-7	B-3220 O/W SEPARATOR	45	1	3	3	2	24.0
-	O-8	SANITARY LANDFILL O/W SEPARATOR	45	1	3	3	2	24.0
-	O-9	B-24009 O/W SEPARATOR	45	1	3	3	2	24.0
-	O-10	B-3400 O/W SEPARATOR	45	1	3	3	2	24.0
-	O-11	B-24007 O/W SEPARATOR	45	1	3	3	2	24.0
-	T-1	B-24009 TRENCH NO.1	45	1	3	2	1	8.0
-	T-2	B-24009 TRENCH NO.2	45	1	3	2	1	8.0
-	T-3	B-4 TRENCH	45	1	2	2	1	8.0
-	T-4	B-2112 TRENCH	0	1	3	2	1	1.6
-	T-5	B-2130 TRENCH	45	1	2	2	1	8.0
-	T-6	B-2101 TRENCH	0	1	3	2	1	1.6
-	T-7	B-2103 TRENCH NO.1	45	1	2	2	1	8.0
-	T-8	B-2103 TRENCH NO.2	45	1	2	2	1	8.0

Appendix C
Installation Restoration Program Sites Scoring, 1995-1996 Site Management Plan
Marine Corps Base Quantico, Quantico, Virginia

SITE DESIGNATION		SITE NAME	Observed	Accessibility	Contaminant	Waste	Targets	TOTAL
IR (IAS)	SWMU (EPIC/RFA)		Release (0/45)		Transport (1-5)	Characteristics (1-5)		SCORE
-	T-9	B-3016 TRENCH	45	1	3	2	1	8.0
-	T-10	B-27054 TRENCH	0	1	2	2	1	1.1
-	TA-1	B-2113 UNDER GROUND TANK	45	1	2	4	2	32.0
-	TA-2	B-27054 TANK NO.1	0	1	1	3	1	0.8
-	TA-3	B-27054 TANK NO.2	0	1	1	3	1	0.8
-	TA-4	B-27054 TANK NO.3	0	1	1	3	1	0.8
-	TA-5	TBS GAS STATION UG TANK	0	1	2	3	1	1.6
-	TA-6	B-2112 UNDER GROUND TANK	0	1	2	3	1	1.6
-	TA-7	NEW BURN PIT UG TANK NO.1	0	1	2	3	1	1.6
-	TA-8	CAMP GOETTGE UG TANK NO.2	0	1	2	2	1	1.1
-	TA-9	CAMP GOETTGE UG TANK NO.2	0	1	2	2	1	1.1
-	TA-10	B-3141 TANK	0	1	2	3	1	1.6
-	TA-11	B-24009 UG TANK	0	1	2	3	1	1.6
-	TA-12	MOTOR TRANSPORT FUEL TANK NO. 24160	0	1	2	3	1	1.6
-	TA-13	MOTOR TRANSPORT FUEL TANK NO. 24161	0	1	2	3	1	1.6
-	TP-1/27	MAINSIDE STP	0	1	2	3	2	3.2
-	TP-28/44	CAMP UPSHUR SEWAGE TREATMENT PLANT	0	1	2	3	2	3.2
-	TP-45	OLD BROWN FIELD STP	0	1	2	3	2	3.2
-	TP-46	MIDWAY ISLAND STP	0	1	2	3	1	1.6
-	TP-47	CAMP GOETTGE STP	0	1	2	3	1	1.6
-	TP-48	RIFLE RANGE STP	0	1	2	3	2	3.2
-	W-1	B-4 WASHRACK	0	1	1	2	2	1.1
-	W-2	B-24007 WASHRACK	45	1	2	2	2	16.0
-	W-3	B-24009 WASHRACK	45	1	2	2	2	16.0
-	W-4	SANITARY LANDFILL WASHRACK	45	1	2	2	2	16.0
-	W-5	B-27956 WASHRACK	45	1	2	2	2	16.0
-	W-6	B-2101 WASHRACK	45	1	1	5	1	20.0
-	W-7	B-2013 WASHRACK NO.1	45	1	2	2	2	16.0
-	W-8	B-663 WASHRACK	45	1	2	2	2	16.0
-	W-9	B-28000 WASHRACK	45	1	2	2	1	8.0
-	W-10	B-3252 WASHRACK	0	1	2	2	2	2.1
-	W-11	B-2013 WASHRACK NO.2	45	1	2	2	2	16.0
-	W-12	B-3016 WASHRACK	45	1	2	2	2	16.0
-	W-13	B-3045 WASHRACK	0	1	2	2	2	2.1
-	W-14	B-27002 WASHRACK	45	1	2	2	2	16.0
-	-	NEW FIRE TRAINING AREA (NEAR OLD BATCH PLANT)	45	2	4	5	2	40.0
-	-	LARSONS GYM OUTFALL	45	2	4	2	4	32.0
-	-	STORM SEWER OUTFALL NO. 16	45	1	3	2	5	40.0
-	-	STORM SEWER OUTFALL NO. 30	45	2	4	3	4	48.0
-	-	FORMER RIFLE RANGE	45	2	3	5	4	80.0

Appendix D
Chemical-specific Values for Hazard
Ranking Scoring for Installation
Restoration Program Sites

TABLE 4-2

**WASTE CHARACTERISTICS FACTORS
MCBQ, VIRGINIA
PAGE 1 OF 4**

Chemical	Superfund Chemical Data Matrix Toxicity Factor ⁽¹⁾	Waste Characteristics Factor for Site Ranking ⁽²⁾
----------	---	--

TAL METALS

Aluminum	--	--
Antimony	10000	5
Arsenic	10000	5
Barium	10000	5
Beryllium	10000	5
Cadmium	10000	5
Calcium	--	--
Chromium (total)	10000	5
Cobalt	1	1
Copper	--	--
Iron	1	1
Lead	10000	5
Magnesium	--	--
Manganese	10000	5
Mercury	10000	5
Nickel	10000	5
Potassium	--	--
Selenium	100	3
Silver	100	3
Sodium	--	--
Thallium	100	3
Vanadium	100	3
Cyanide	100	3
Zinc	10	2

TCL VOLATILE ORGANIC COMPOUNDS

1,1,1-Trichloroethane	1	1
1,1,2,2-Tetrachloroethane	10	2
1,1,2-Trichloroethane	1000	4
1,1-Dichloroethane	10	2
1,1-Dichloroethene	100	3
1,2-Dichloroethane	100	3
1,2-Dichloropropane	1000	4
2-Butanone	10	2
2-Hexanone	1	1
4-Methyl-2-pentanone	100	3
Acetone	10	2
Benzene	100	3
Bromodichloromethane	100	3
Bromoform	--	--

TABLE 4-2

WASTE CHARACTERISTICS FACTORS
MCBQ, VIRGINIA
PAGE 2 OF 4

Chemical	Superfund Chemical Data Matrix Toxicity Factor ⁽¹⁾	Waste Characteristics Factor for Site Ranking ⁽²⁾
Bromomethane	1000	4
Carbon disulfide	10	2
Carbon tetrachloride	1000	4
Chlorobenzene	100	3
Chloroethane	1	1
Chloroform	100	3
Chloromethane	10	2
cis-1,2-Dichloroethene	100	3
cis-1,3-Dichloropropene	100	3
Dibromochloromethane	100	3
Ethylbenzene	10	2
Methylene chloride	10	2
Styrene	10	2
Tetrachloroethene	100	3
Toluene	10	2
trans-1,2-Dichloroethene	100	3
trans-1,3-Dichloropropene	--	--
Trichloroethene	100	3
Vinyl chloride	10000	5
Xylenes (total)	10	2
TCL SEMIVOLATILE ORGANIC COMPOUNDS		
1,2,4-Trichlorobenzene	100	3
1,2-Dichlorobenzene	10	2
1,3-Dichlorobenzene	--	--
1,4-Dichlorobenzene	10	2
2,4,5-Trichlorophenol	10	2
2,4,6-Trichlorophenol	10	2
2,4-Dichlorophenol	1000	4
2,4-Dimethylphenol	100	3
2,4-Dinitrophenol	1000	4
2,4-Dinitrotoluene	1000	4
2,6-Dinitrotoluene	1000	4
2-Chlorophenol	100	3
2-Methylnaphthalene	--	--
2-Methylphenol	10	2
2-Nitroaniline	10000	5
2-Nitrophenol	1	1
3,3'-Dichlorobenzidine	100	3
3-Nitroaniline	10	2
4,6-Dinitro-2-methylphenol	100	3
4-Bromophenyl phenyl ether	--	--
4-Chloro-3-methylphenol	1	1
4-Chloroaniline	1000	4

TABLE 4-2

WASTE CHARACTERISTICS FACTORS
MCBQ, VIRGINIA
PAGE 3 OF 4

Chemical	Superfund Chemical Data Matrix Toxicity Factor ⁽¹⁾	Waste Characteristics Factor for Site Ranking ⁽²⁾
4-Chlorophenyl phenyl ether	--	--
4-Methylphenol	100	3
4-Nitroaniline	1	1
4-Nitrophenol	1	1
Acenaphthene	10	2
Acenaphthylene	--	--
Anthracene	10	2
Benzo(a)anthracene	1000	4
Benzo(a)pyrene	10000	5
Benzo(b)fluoranthene	1000	4
Benzo(g,h,i)perylene	--	--
Benzo(k)fluoranthene	100	3
Bis(2-chloroethoxy)methane	100	3
Bis(2-chloroethyl)ether	1000	4
Bis(2-chloroisopropyl)ether	100	3
Bis(2-ethylhexyl)phthalate	100	3
Butyl benzyl phthalate	10	2
Carbazole	10	2
Chrysene	10	2
Di-n-butyl phthalate	10	2
Di-n-octyl phthalate	100	3
Dibenzo(a,h)anthracene	10000	5
Dibenzofuran	--	--
Diethyl phthalate	1	1
Dimethyl phthalate	10	2
Fluoranthene	100	3
Fluorene	100	3
Hexachlorobenzene	1000	4
Hexachlorobutadiene	10000	5
Hexachlorocyclopentadiene	10000	5
Hexachloroethane	1000	4
Indeno(1,2,3-cd)pyrene	1000	4
Isophorone	10	2
n-Nitrosodiphenylamine	10	2
n-Nitrosodi-n-propylamine	--	--
Naphthalene	100	3
Nitrobenzene	1000	4
Pentachlorophenol	100	3
Phenanthrene	--	--

TABLE 4-2
WASTE CHARACTERISTICS FACTORS
MCBQ, VIRGINIA
PAGE 4 OF 4

Chemical	Superfund Chemical Data Matrix Toxicity Factor ⁽¹⁾	Waste Characteristics Factor for Site Ranking ⁽²⁾
Phenol	1	1
Pyrene	100	3
TCL ORGANOCHLORINE PESTICIDES/PCBs		
Aldrin	10000	5
Alpha-BHC	10000	5
Beta-BHC	100	3
Alpha-Chlordane	10	2
Gamma-Chlordane	10	2
4,4'-DDD	100	3
4,4'-DDE	100	3
4,4'-DDT	1000	4
Delta-BHC	1	1
Dieldrin	10000	5
Endosulfan I	100	3
Endosulfan II	100	3
Endosulfan sulfate	100	3
Endrin	10000	5
Endrin aldehyde	--	--
Endrin ketone	100	3
Gamma-BHC (Lindane)	10000	5
Heptachlor	1000	4
Heptachlor epoxide	10000	5
Methoxychlor	100	3
Toxaphene	1000	4
Aroclor-1016	10000	5
Aroclor-1221	10000	5
Aroclor-1232	10000	5
Aroclor-1242	10000	5
Aroclor-1248	10000	5
Aroclor-1254	10000	5
Aroclor-1260	10000	5

MCBQ Marine Corps Base Quantico
PCBs Polychlorinated biphenyls
TAL Target Analyte List
TCL Target Compound List

- 1 Superfund Chemical Data Matrix (SCDM) (USEPA, 1996).
- 2 Values were derived from information contained in the SCDM database. SCDM factors were assigned accordingly: 10000 = 5; 1000 = 4; 100 = 3; 10 = 2; 1 = 1.

Appendix E
Modified Hazard Ranking System Scoring
Worksheet and Methodology for
Installation Restoration Program Sites

Installation Restoration Program Site Re-ranking Worksheet

Rating Factor	Assigned Value	Post-Investigation Score	FY 1995-1995 SMP Score	Maximum Possible Score
(1) Observed Release	45			45
(2) Waste Characteristics	1 2 3 4 5 x 3			15
(3) Targets	1 2 3 4 5 x 6			30
(4) Human Health Risk Evaluation	1 5 10 20			20
(5) Ecological Risk Evaluation	1 5 10 20			20
(6) Threat	1 5 10 20			20
(7) If rescoring a DTA site, multiply (1) x (2) x (3). Otherwise, multiply (1) x (2) x (3) x (4) x (5) x (6)				20,250 or 162,000,000
(8) Divide line (7) by the applicable Maximum Possible Score (20,250 if a DTA site or 162,000,000 for other sites) and multiply by 100 TOTAL SCORE = (0 to 100)				

Notes:

- Only those sites that require further investigation will be re-ranked using this methodology

DTA – Desktop Audit

FY – Fiscal Year

Methodology to Re-Rank Installation Restoration Program Sites

E.1 Desktop Audit Sites

No additional rating factors will be used to re-rank an IR site following the completion of a Desktop Audit (DTA) investigation. The existing SMP rating factors will be re-examined based on new information obtained during the DTA investigation. Current and likely future land use at the site will be used to re-evaluate the Accessibility and Targets factors. Information obtained as a result of the DTA file research will be used to re-evaluate the Observed Release factor will be changed to 45 because the site would not have been recommended for further action if there was no evidence to support a release of hazardous constituents to the environment.

E.2 Desktop Audit with Sampling Investigations

For those IR sites recommended for further action as a result of the completion of a Desktop Audit with Sampling (DTAWS) investigation, the existing SMP rating factors will be re-examined based on information obtained during the DTAWS investigation. The value in the Observed Release factor will be changed to 45 because the site would not have been recommended for further action if data collected during the DTAWS investigations did not support a release of hazardous constituents. Changes to the Observed Release factor will not be necessary for sites that have previously undergone a DTA investigation since the score in this category would have been updated based on the findings of the DTA investigation.

The following three additional rating factors will be added based on the qualitative human health and ecological risk screening performed as part of the DTAWS:

- Human Health Risk Evaluation (1, 10, or 20)
- Ecological Risk Evaluation (1, 10, or 20)
- Threat (1, 10, or 20)

A determination of whether detected constituents are attributable to historical site activities is an integral factor to the scoring of the three new rating factors. If during the DTAWS process, a detected chemical is not regarded as site-related, the results of the screening for this chemical will not be considered during the re-scoring process. Statistical representative MCBQ background/anthropogenic concentrations for soil (and possibly sediment) will be used to determine if detected soil (sediment) constituents are related to site activities. Data for site-specific upstream or upgradient sample locations will be used for surface water/sediment and groundwater to evaluate whether detected chemicals are site-related. For instance, if detected concentrations of iron in the groundwater are suspected to be a result of natural background conditions or anthropogenic sources, exceedances of the risk-based standards for this chemical will not be examined when determining the scores for the Human Health Risk Evaluation, Ecological Risk Evaluation, and Threat factors.

The score for the Human Health Risk Evaluation and Ecological Risk Evaluation will be determined based on the comparison of detected site concentrations for site-related chemicals to risk-based human health and ecological screening levels. Separate scores will be developed for human health and ecological risk evaluations since screening levels for the two types of receptors vary. The same scoring system will be used for both factors.

Since various types of human health and ecological risk-based screening levels will be presented in the DTAWS report, one of three scores will be applied to the IRP site to assess the Human Health Risk Evaluation and Ecological Risk Evaluation factors. The scores vary based on the severity of exceedances of the screening levels. If detected site concentrations do not exceed any of the risk-based screening levels, a score of 1 will be assigned to the site. A score of 10 will be used when detected site concentrations only exceed the lowest risk-based screening

levels. If detected site concentrations exceed the lowest criteria plus other criteria (e.g., ecological criteria based on medium range effects or migration to groundwater criteria), a score of 20 will be applied to the site. Under this scenario, the potential for effects is assumed to be high.

The Threat factor will be used to identify whether there is the potential for an imminent threat to human health and/or the environment. Current and likely future land use will be considered when determining the score for this rating factor. If an imminent threat currently exists or is likely to exist in the foreseeable future for human health or ecological receptors, a score of 10 will be given to the site. A total score of 20 may be applicable if imminent threats to human health **and** the environment are anticipated. A score of 1 will be given to a site when there is no threat (human health or ecological) or when the potential for a threat is minimal. For instance, if the site is located in an industrialized portion of MCBQ and does not support an ecological habitat, a score of 1 would be applied for the Threat.

As per the HRS scoring methodology, the individual scores for Observed Release, Waste Characteristics, Targets, Human Health Risk Evaluation, Ecological Risk Evaluation, and Threat are multiplied together. To arrive at a Total Score, the value for each site is divided by the highest possible score for these factors (162,000,000) and then multiplied by 100 to fall within the range of 1 to 100.

E.3 Site Screening Process or Other Phases of Remedial Investigations

A modified ranking system similar to the DTAWS system identified in the previous section will be used for those IRP sites recommended for further action as a result of the completion of an Site Screening Process (SSP) or other phase of remedial investigation. The existing SMP rating factors also will be re-examined based on information obtained during the investigation. The value in the Observed Release factor will be changed to 45 because the site would not have been recommended for further action if data collected during the investigation did not support a release of hazardous constituents. Changes to the Observed Release factor will not be necessary for sites that have previously undergone previous investigations because the score in this category would have been updated based on the findings of the previous investigation.

Although the method for scoring will be different than for the DTAWS investigation, the following three additional rating factors will be added based on the quantitative human health and ecological risk estimates calculated as part of the SSP or other phase of remedial investigation:

- Human Health Risk Evaluation (1, 5, 10, or 20)
- Ecological Risk Evaluation (1, 5, 10, or 20)
- Threat (1, 5, 10, or 20)

The methodology used to determine the risk estimates for the SSP investigation was documented in MCBQ Consensus Agreement No. 3, which was signed on May 21, 1999 by members of the QPMT. Risk assessment methodology used for other phases of remedial investigations is developed and approved by the QPMT on a site-specific basis. A determination of whether detected constituents are attributable to historical site activities has been incorporated into the ranking system. During the SSP or other phase of remedial investigation, qualitative and quantitative evaluations will be completed to determine whether site soil (and possibly “dry” sediment) data are attributable to MCBQ background/anthropogenic concentrations or whether constituents are related to site activities. Data for site-specific upstream or upgradient sample locations will be used for surface water/sediment and groundwater to evaluate whether detected chemicals are site-related. For instance, if detected concentrations of aluminum in the surface soil are attributable to Basewide background conditions, aluminum would not be considered when determining the scores for the Human Health Risk Evaluation, Ecological Risk Evaluation, and Threat factors, even if detected site concentrations exceeded risk-based screening levels.

The score for the Human Health Risk Evaluation and Ecological Risk Evaluation will be determined based on quantitative risk estimates conducted during the SSP or other phase of remedial investigation. Separate scores will be developed for human health and ecological risk evaluations since separate quantitative risk estimates are

calculated for these two types of receptors. Although slightly different, a similar scoring system will be used for the Human Health Risk Evaluation and Ecological Risk Evaluation factors. The modified scoring system was developed based on target risk levels used for decision-making purposes.

The score for the Human Health Risk Evaluation factor will be determined based on the two types of quantitative risk estimates, a Hazard Index (HI) for noncarcinogenic effects and an incremental cancer risk (ICR) for carcinogenic effects. If the HI for the site is less than 1 **and** the ICR is less than $1\text{E-}5$, a score of 1 will be assigned to the site. If the HI for the site is greater than 1 but less than 10 **and/or** the ICR is greater than $1\text{E-}5$ but less than $1\text{E-}4$, a score of 5 will be assigned to the site. If the HI for the site exceeds 50 **and/or** the ICR exceeds $1\text{E-}5$, a score of 10 will be assigned to the site. If the HI for the site exceeds 50 **and/or** the ICR exceeds $1\text{E-}4$, a score of 20 will be assigned to the site.

The potential for ecological risk is evaluated by the calculation of an HI (ICRs are not applicable for ecological receptors). Thus, the score for the Ecological Risk Evaluation factor will be determined based on the HI calculated for the SSP investigation. If the HI for the site is less than 1, a score of 1 will be assigned to the site. If the HI for the site is greater than 1 but less than 100, a score of 10 will be given to the site. If the HI for the site exceeds 100, a score of 20 will be assigned to the site.

The Threat factor will be used to identify whether there is the potential for an imminent threat to human health and/or the environment. Current and likely future land use will be considered when determining the score for this rating factor. If an imminent threat currently exists or is likely to exist in the foreseeable future for human health **or** ecological receptors, a score of 10 will be assigned to the site. A total score of

20 may be applicable if imminent threats to human health **and** the environment are anticipated. A score of 1 will be assigned to a site when there is no threat (human health or ecological) or when the potential for a threat is minimal. For instance, if the site is located in an industrialized portion of MCBQ and does not support an ecological habitat, a score of 1 would be applied for the Threat factor.

As per the HRS scoring methodology, the individual scores for Observed Release, Waste Characteristics, Targets, Human Health Risk Evaluation, Ecological Risk Evaluation, and Threat will be multiplied together. To arrive at a Total Score, the value for each site is divided by the highest possible score for these factors (162,000,000) and then multiplied by 100 to fall within the range of 1 to 100.

Appendix F
Munitions Response Site Prioritization
Protocol Rankings

Appendix F
Munitions Response Site Prioritization Protocol Rankings

Site Number	Site Name	Site Risk			EHE Module			CHE Module			HHE Module	
		MRS Priority	MRS Priority Source	Last Updated	Priority	Overall Score	Overall Rating	Priority	Overall Score	Overall Rating	Priority	Source
UXO 0001	Little Creek Skeet Range	6	HHE	10/22/2012	8	32	G	NH	-	-	6	SEDEF, SOIL
UXO 0002	600 YD Rifle Range South	NR	-	10/27/2010	NR	-	-	NH	-	-	NH	-
UXO 0003	601 YD Rifle Range North	NR	-	10/27/2010	NR	-	-	NH	-	-	NH	-
UXO 0004	1000 YD Range	NR	-	10/27/2010	NR	-	-	NH	-	-	NH	-
UXO 0005	0.22 Caliber Anti Aircraft Range	NH	-	10/27/2010	NH	-	-	NH	-	-	NH	-
UXO 0006	1000 Inch Landscape Range	NH	-	9/29/2014	NH	-	-	NH	-	-	NH	-
UXO 0007	Federal Bureau of Investigation Target Range	NH	EHE	10/27/2010	NH	-	-	NH	-	-	NH	-
UXO 0008	600 Yard Polo Field Rifle Range	NR	-	10/27/2010	NR	-	-	NH	-	-	NH	-
UXO 0009	Original Pistol Range	NR	-	10/27/2010	NR	-	-	NH	-	-	NH	-
UXO 0010	Replacement Pistol Range	NR	-	10/27/2010	NR	-	-	NH	-	-	NR	-
UXO 0011	Machine Gun Range	NH	-	10/27/2010	NH	-	-	NH	-	-	NH	-
UXO 0012	Turner Field Skeet Range	NH	-	9/4/2015	NH	-	-	NH	-	-	NH	-
UXO 0013	81-mm Mortar Range	3	EHE	10/20/2014	3	90	B	NH	-	-	7	SEDH
UXO 0014	Marine Corps Flying Field Bombing Targets No. 1	NR	EHE	10/27/2010	NR	-	-	NH	-	-	NH	-
UXO 0015	Marine Corps Flying Field Bombing Targets No. 2	NR	-	12/15/2010	NR	-	-	NH	-	-	NH	-
UXO 0016	Marine Corps Flying Field Bombing Targets No. 3	NR	-	12/15/2010	NR	-	-	NH	-	-	NH	-
UXO 0017	Marine Corps Flying Field Bombing Targets No. 4	NR	-	12/15/2010	NR	-	-	NH	-	-	NH	-
UXO 0018	Marine Corps Flying Field Bombing Targets	6	EHE	10/20/2014	6	59	E	NH	-	-	NH	-
UXO 0019	Grenade Field	3	EHE	10/20/2014	3	90	B	NH	-	-	EP	-
UXO 0020	Artillery Range	NR	-	10/27/2010	NH	-	-	NH	-	-	NR	-
UXO 0021	Combat Area C Field Firing Range	3	EHE	10/20/2014	3	88	B	NH	-	-	EP	-
UXO 0022	Aviation Bombing Range	NR	-	10/27/2010	NR	-	-	NH	-	-	NR	-
UXO 0023	Aircraft Artillery Spotting Range	NE	-	-	-	-	-	-	-	-	-	-
UXO 0024	Combat Area E Field Firing Range	NR	-	10/27/2010	NR	-	-	NR	-	-	NR	-
UXO 0025	Quantico Clubs	2	EHE	10/20/2014	2	93	A	NH	-	-	EP	-
UXO 0026	Chopawamsic Creek Skeet Range No. 1	3	HHE	10/24/2011	8	32	G	NH	-	-	3	SEDEF, SEDH
UXO 0031	Camp Barrett Training Areas 5 and 8	NR	-	10/31/2018	NR	-	-	NH	-	-	NH	-
UXO 0032	Camp Upshur Training Area 17	NH	-	10/24/2011	NH	-	-	NH	-	-	NH	-
UXO 0033	FBI Training Area 8	3	EHE	10/22/2012	3	90	B	NH	-	-	EP	-
UXO 0034	Lunga Recreation Area South	2	EHE	10/22/2012	2	93	A	NH	-	-	EP	-
UXO 0035	Lunga Reservoir	3	EHE	10/30/2014	3	88	B	NH	-	-	EP	-
UXO 0036	Grenade Pit	4	EHE	10/20/2014	4	75	C	NH	-	-	EP	-
UXO 0037	Chopawamsic Creek Range Fans	4	EHE	10/31/2018	4	78	C	NH	-	-	EP	-
UXO 0038	Lunga Recreation Area Central	3	EHE	10/30/2018	3	87	B	NH	-	-	EP	-
UXO 0039	Lunga Recreation Area North	3	EHE	10/30/2018	3	87	B	NH	-	-	EP	-

Notes:
UXO 0027 - Potomac River Firing Range, UXO 0028 - Marine Corps Exchange, UXO 0029 - Chopawamsic Creek Skeet Range No. 2, and UXO 0030 - Bore Sighting Range are not in NORM and therefore do not have MRSPP evaluations.
Grey text is associated with CLOSED site
CHE - Chemical Warfare Material Hazard Evaluation
EHE - Explosive Hazard Evaluation
EP - evaluation pending
HHE - Health Hazard Evaluation
NE - not evaluated
NH - No known or suspected hazard
NR - No Longer Required; response conducted, all objectives set out in the decision document have been achieved, and no further action, except for long-term management and recurring reviews, is required.
SEDEF - Sediment Eco Fresh
SEDH - Sediment Human
SOIL - Surface Soil

Appendix G
Munitions Response Program
Terminology

TERMINOLOGY

Armed. A munition that is ready to function. Safety devices have been removed or otherwise disabled, thus allowing all arming mechanisms to become fully functional.

Danger Zone (Safety Fan): Theoretical distance that a fired munition could be expected to travel, if there was nothing in its way to impede its progress.

Defense Environmental Restoration Program (DERP). Program that addresses hazardous substances, pollutants, contaminants, and, in some cases, military munitions remaining from past operations at military installations and formerly used defense sites. DERP was established by Section 211 of the Superfund Amendments and Reauthorization Act (SARA) of 1986. (10 U.S.C. 2702-2706 and 10 U.S.C. 2810-2811)

Defense Sites. Locations that are or were owned by, leased to, or otherwise possessed or used by the Department of Defense. The term does not include any operational range, operating storage or manufacturing facility, or facility that is used for or was permitted for the treatment or disposal of military munitions. (10 U.S.C. 2710(e)(1))

Discarded Military Munitions (DMM). Military munitions that have been abandoned without proper disposal or removed from storage in a military magazine or other storage area for the purpose of disposal. The term does not include unexploded ordnance, military munitions that are being held for future use or planned disposal, or military munitions that have been properly disposed of consistent with applicable environmental laws and regulations. (10 U.S.C. 2710(e)(2))

Explosives. All munitions containing explosives, nuclear fission or fusion materials, and biological and chemical agents. This includes bombs and warheads; guided and ballistic missiles; artillery, mortar, rocket, and small arms ammunition, all mines, torpedoes, and depth charges; demolition charges; pyrotechnics; clusters and dispensers; cartridge and propellant actuated devices; electro-explosive devices; clandestine and improvised explosive devices; and similar or related items or components explosive in nature.

Explosives or Munitions Emergency Response. All immediate response activities by an explosives and munitions emergency response specialist to control, mitigate, or eliminate the actual or potential threat encountered during an explosives or munitions emergency. An explosives or munitions emergency response may include in-place render-safe procedures, treatment or destruction of the explosives or munitions, and/or transporting those items to another location to be rendered safe, treated or destroyed. Any reasonable delay in the completion of an explosives or munitions emergency response caused by a necessary, unforeseen, or uncontrollable circumstance will not terminate the explosives or munitions emergency. Explosives and munitions emergency responses can occur on either public or private lands and are not limited to responses at Resource, Conservation, and Recovery Act (RCRA) facilities. (Military Munitions Rule, 40 CFR 260.10)

Explosive hazard. A condition where danger exists because explosives are present that may react (e.g., detonate, deflagrate) in a mishap with potential unacceptable effects (e.g., death, injury, damage) to people, property, operational capability, or the environment. (32 CFR 179.3)

Military Munitions. Military munitions means all ammunition products and components produced for or used by the armed forces for national defense and security, including ammunition products or components under the control of the Department of Defense, the Coast Guard, the Department of Energy, and the National Guard. The term includes confined gaseous liquid, and solid propellants, explosives and chemical warfare agents, chemical munitions, rockets, guided and ballistic missiles, bombs, warheads, mortar rounds, artillery ammunition, small arms

ammunition, grenades, mines, torpedoes, depth charges, cluster munitions and dispensers, demolition charges, and devices and components thereof.

The term does not include wholly inert items, improvised explosive devices, and nuclear weapons, nuclear devices, and nuclear components, other than non-nuclear components of nuclear devices that are managed under the nuclear weapons program of the Department of Energy after all required sanitization operations under the Atomic Energy Act of 1954 (42 U.S.C. 2011 et seq.) have been completed. (10 U.S.C. 101 (e)(4))

Munitions Constituents (MC). Any materials originating from unexploded ordnance, discarded military munitions, or other military munitions, including explosive and non-explosive materials, and emission, degradation, or breakdown elements of such ordnance or munitions. (10 U.S.C. 2710 (e)(4))

Munitions and Explosives of Concern (MEC). This term, which distinguishes specific categories of military munitions that may pose unique explosives safety risks, means:

- (A) Unexploded Ordnance (UXO), as defined in 10 U.S.C 2710 (e) (9);
- (B) Discarded military munitions (DMM), as defined in 10 U.S.C. 2710 (e)(2); or
- (C) Munitions Constituents (MC) (e.g. TNT, RDX) present in high enough concentrations to pose an explosive hazard.

Munitions Response. Response actions, including investigation, removal and remedial actions to address the explosives safety, human health, or environmental risks presented by unexploded ordnance (UXO), DMM, or MC.

Munitions Response Area (MRA). Any area on a defense site that is known or suspected to contain UXO, DMM, or MC. Examples include former ranges and munitions burial areas. A munitions response area is comprised of one or more munitions response sites (MRSs).

Munitions Response Program Site Prioritization Protocol (MRSP). A tool adopted by the Department of the Defense under the authority of 10 U.S.C 2710(b) to assign each defense site in the inventory required by 10 U.S.C. 2710(a) a relative priority for response activities based on the overall conditions at each location and taking into consideration various factors related to safety and environmental hazards. (32 CFR 179.1)

Munitions Response Site (MRS). A discrete location within an MRA that is known to require a munitions response.

Operational Range. A range that is under the jurisdiction, custody, or control of the Secretary of Defense and

- (A) that is used for range activities; or
- (B) although not currently being used for range activities, that is still considered by the Secretary to be a range and has not been put to a new use that is incompatible with range activities. (10 U.S.C. 101(e)(3))

Practice. All UXO that are practice munitions that are not associated with a sensitive fuze, and all DMM that are practice munitions that are not associated with a sensitive fuze and that have not been damaged by burning or detonation, or deteriorated to the point of instability. (32 CFR Part 179, Appendix A, Table 1)

Range. This term, when used in a geographic sense, means a designated land or water area that is set aside, managed, and used for range activities of the Department of Defense. Such term includes the following:

- (A) Firing lines and positions, maneuver areas, firing lanes, test pads, detonation pads, impact areas, electronic scoring sites, buffer zones with restricted access, and exclusionary areas.

- (B) Airspace areas designated for military use in accordance with regulations and procedures prescribed by the Administrator of the Federal Aviation Administration. (10 U.S. C. 101 (e)(3))

Small arms ammunition. Ammunition, with projectiles that contain explosives (other than tracers) that is 0.50 caliber or less, or for shotguns. (32 CFR Part 179, Appendix A)

Surface. The munition (i.e., UXO or DMM) is entirely or partially exposed above the ground surface (e.g., above the soil layer), or entirely or partially exposed above the surface of a water body (e.g., as a result of tidal activity). (32 CFR Part 179, Appendix A, Tables 3 and 13)

Unexploded Ordnance (UXO). Military munitions that:

- (A) have been primed, fused armed or otherwise prepared for action;
- (B) have been fired, dropped, launched, projected, or placed in such a manner as to constitute a hazard to operations, installations, personnel, or material; and
- (C) remain unexploded whether by malfunction, design or any other cause. (10 U.S.C. 101 (e)(5))

Appendix H
Environmental Restoration Program Goals
– Updated 15 October 2019

Team Goal	Current FY	Upcoming FY	Marine Corps Base Quantico Environmental Restoration Program Goals Updated 15 October 2019					
			SITE	GOAL/MILESTONE	DUR ⁽¹⁾	PLANNED DATE	REVISED DATE	ACTUAL DATE
			Facility Wide					
	20			Submit Draft PFAS Preliminary Assessment Report		Dec-19		
G	20			Submit Final PFAS Preliminary Assessment Report		Mar-20		
G	20			Submit Final Community Involvement Plan		Oct-19		
G	20			Submit Final FY20 Site Management Plan		Oct-19		
		22		Submit Draft 5th 5-Year Review Report		Sep-22		
		23		Submit Final 5th 5-Year Review Report		Mar-23		Final signature due 5 June 2023
		28		Preliminary Closeout Report (PCOR)		Sep-36		
			IRP Site 4	Old Landfill - OU 4				24-acre old landfill located on the banks of the Potomac River on the Mainside of MCBQ. Site is bounded on east by the Potomac River, on west by railroad tracks, and on south by an unnamed tributary. Operations of the landfill began in 1920s and ended in 1971. Landfill served as the primary disposal area for wastes that included municipal refuse, construction and demolition debris, sludge from a paint spray booth, paints and thinners, partially filled paint cans, dielectric fluids, waste oils, vehicle batteries, and compressor oils along with residential waste. An interim removal action was performed during the RI stage to address PCB-contaminated soils and sediment. The ROD was signed December 2007; selected remedy of LTM, LUCs, and site reviews. Site is being addressed under Phase 7 (LTM), Exit Strategy - Continued LTM with evaluation of analytical data annually (to determine possible cost savings); LTM combined with Site 99 - Quantico Embayment starting in 2018. RC achieved 2/20/2015.
	20			Complete 2019 LTM Efforts		Nov-19		Ninth annual LTM event.
	20			Submit Draft LTM Report		Apr-20		
G	20			Submit Final LTM Report		Sep-20		Combined with Site 99 LTM
		21		Complete 2020 LTM Efforts		Nov-20		Tenth annual LTM event.
		21		Submit Draft LTM Report		Apr-21		
		21		Submit Final LTM Report		Sep-21		Combined with Site 99 LTM
			IRP Site 95	Building 2101 Paint Booth Sump - OU 19				Located on the Marine Corps Air Facility Turner Airfield inside the former paint shop of former Building 2101. The sump was a subgrade concrete unit with a submersible pump that was embedded in the building's floor covered by a metal grill. The unit received washwater from the paint booth. A treatability study for the use of oxygen-releasing compound (ORC) was performed and additional sampling was recommended to delineate the nature and extent of contamination. During the completion of a Supplemental Investigation, a source area upgradient of the sump was identified. An additional treatability study for in-situ chemical oxidation (ISCO) and a time-critical removal action (TCRA), consisting of groundwater treatment and soil mixing, was completed prior to contruction of the Bachelor's Enlisted Quarters (BEQ). The ROD was signed August 2008; selected remedy of enhanced in situ bioremediation, ORC treatment, LUCs, and site reviews. Site is being addressed under Phase 6 (RAO), RC planned for 2027. Exit Strategy - The investigation for re-evaluation of the final remedy is ongoing. TBD based on supplemental investigation and future ESD/ROD Amendment
	20			Submit Draft Technical Memorandum		Dec-19		Will summarize investigation field work and 2 rounds of GW sampling; will include recommendations for either additional GW monitoring or if can move on to FS Addendum
G	20			Submit Final Technical Memorandum		May-20		
	20			Submit Draft VI Investigation UPF-SAP		Aug-20		
		21		Submit Final VI Investigation UFP-SAP		Dec-20		Due to presence of cVOC plume near BEQ (but not beneath it as suggested by recent GW data), a VI investigation in the building is needed to ensure that all potential exposure pathways are covered and to ensure that the vapor mitigation system installed by the Marine Corps is operating as intended.
	21			Complete VI Investigation of BEQ		Feb-21		
	21			Submit Draft VI Investigation Technical Memorandum		Aug-21		
	22			Submit Final VI Investigation Technical Memorandum		Dec-21		
	22			Complete FFS MNA Sampling		Mar-22		
	23			Submit Draft Feasibility Study Addendum		Sep-23		Path forward TBD; actual timeframe depends on Tech Memo findings (assuming additional GW sampling will be needed as worst-case)
	24			Submit Final Feasibility Study Addendum		Feb-24		
	24			Submit Draft Proposed Plan		Apr-24		Required 9 month review time.
	25			Submit Final Proposed Plan		Jan-25		
	25			Submit Draft ROD Amendment		Apr-25		Required 9 month review time.
	26			Submit Final ROD Amendment		Jan-26		
	26			Obtain Signature on Final ROD Amendment		Feb-26		
	26			Submit Draft Remedial Design		Apr-26		
	26			Submit Final Remedial Design		Aug-26		
	27			RA Start		Mar-27		
	29			Submit Draft LUC Remedial Design		Jun-29		
	30			Submit Final LUC Remedial Design		Oct-29		
	30			Submit Draft Remedial Action Completion Report		Dec-29		Assumes 2 years short term performance monitoring
	30			Submit Final Remedial Action Completion Report		Apr-30		
	30			Submit Draft LTM Plan		Jul-30		Assumes 10 years of LTM.
	31			Submit Final LTM Plan		Nov-30		
	31			Complete Round 1 of LTM Sampling		Feb-31		
	31			Submit Draft 1st Monitoring Report		May-31		
	32			Submit Final 1st Monitoring Report		Oct-31		

Team Goal	Current FY	Upcoming FY	Marine Corps Base Quantico Environmental Restoration Program Goals Updated 15 October 2019					COMMENTS
			SITE	GOAL/MILESTONE	DUR ⁽¹⁾	PLANNED DATE	REVISED DATE	
		28		Response Complete		Jun-28		NORM RC date is 09/30/2036.
			IRP Site 99	Quantico Embayment - OU 12				Site 99 Quantico Embayment - Includes former Site 96, Quantico Embayment, the drainage channel near the Mainside STP, and the Potomac River Sediment Area 1. The ROD was signed September 2011. Selected remedy for the Quantico Embayment - habitat enhancement cap (HEC), LUCs covering 10.9 acres of contaminated sediment, and site reviews. Selected remedy for the drainage channel - dredging of 1600 CY of contaminated sediment. Selected remedy for the PRSA1 - Monitored Natural Recovery (MNR), LUCs over 5 acres of contaminated sediment, and site reviews. Selected remedy for former Site 96 - dredging and offsite disposal of 0.1 acre or contaminated sediment. Site is being addressed under Phase 7 (LTM). Exit Strategy - Continued LTM with evaluation of analytical data annually (to determine possible cost savings); LTM combined with Site 4 - Old Landfill in 2018. RC achieved February 20, 2015.
	20			Complete 2019 LTM Efforts		Nov-19		Year 5 LTM event
	20			Submit Draft LTM Report		Apr-20		
G	20			Submit Final LTM Report		Sep-20		Combined with Site 4 LTM
		21		Complete 2020 LTM Efforts		Nov-20		Year 6 LTM event (scope of sampling TBD; based on EPA acceptance of recommendations in Year 5 LTM report)
		21		Submit Draft LTM Report		Apr-21		
		21		Submit Final LTM Report		Sep-21		Combined with Site 4 LTM
			IRP Site 100	Chopawamsic Creek - OU 13				Site has been divided into four areas designated Areas No. 1 through 4. Areas 1, 2, and 4 are no further action (NFA) under CERCLA, while Area 3 required remedial action to address lead-contaminated sediment. The ROD was signed September 2011. Selected remedy of Monitored Natural Attenuation (MNR) which relies on the natural deposition of clean sediment over lead-contaminated sediment, LUCs, and site reviews. Site is being addressed under Phase 7 (LTM), RC achieved February 2015. Exit Strategy - Continued LTM with evaluation of analytical data annually (to determine possible cost savings); potential to do ROD ESD and closeout Area 3 under NFA based on outcome of additional risk evaluation and food web modeling. RC achieved February 20, 2015.
G	20			Final Food Web Modeling Technical Memorandum		Jan-20		Attempting to schedule site visit with BTAG where Navy technical support can also attend. Site visit should be performed before decision regarding tech memo.
		21		Submit Draft Proposed Plan		Oct-20		Path forward TBD; requires 9 month review time.
		21		Submit Final Proposed Plan		Jul-21		
		21		Submit Draft ROD Amendment		Sep-21		Path forward TBD; requires 9 month review time.
		22		Submit Final ROD Amendment		Jun-22		
		22		Obtain ROD Amendment Signatures		Aug-22		
			IRP Site 102	Abraham's Creek - OU 23				Site 102 was created from a portion of Site 100 Area 4 that required additional investigation under the IRP. Additional RI studies are being completed to address risks at the site. The site is being addressed under Phase 2 (RI/FS) of the IRP. Exit Strategy - Evaluate appropriate long term remedies using NEBA and other factors.
G	20			Submit Final Feasibility Study Report Addendum		Feb-20		
	20			Submit Draft Proposed Plan		May-20		Requires 9 month review time.
		21		Submit Final Proposed Plan		Feb-21		
		21		Submit Draft ROD		May-21		Requires 9 month review time.
		22		Submit Final ROD		Feb-22		
		22		Obtain ROD Signatures		Mar-22		
		22		Submit Draft Remedial Design		May-22		
		22		Submit Final Remedial Design		Sep-22		
		23		RA Start		Feb-23		Path forward TBD
		24		Submit Draft LUC Remedial Design		Dec-23		
		24		Submit Final LUC Remedial Design		Apr-24		
		24		Submit Draft Remedial Action Completion Report		Jun-24		
		25		Submit Final Remedial Action Completion Report		Oct-24		
		25		Submit Draft LTM Plan		Jan-25		
		25		Submit Final LTM Plan		May-25		
		25		Complete Year 1 LTM Sampling		Sep-25		
		26		Submit Draft Year 1 LTM Report		Jan-26		
		26		Submit Final Year 1 LTM Report		May-26		
		25		Response Complete		Oct-24		NORM RC date is 9/30/2024.
			IRP Site 104	SWMU M-13 Building 2113 Underground Tank Loading/Unloading Area - OU 21				Building 2113 is a heating plant for the Base and is located within Mainside MCBQ along the Potomac River and adjacent to Bauer Road. SWMU M13 is located on the southwest side of Building 2113. Site consists of a concrete pad, a sump, and associated underground piping, which serviced the Underground Tank Loading/Unloading Area adjacent to the Potomac River within TA-2. The ROD was signed September 2014. Selected remedy of in situ enhanced bioremediation, monitoring, LUCs, and site reviews. Site is being addressed under Phase 3/4 (RD/RA), RC is planned for 2027. Exit Strategy - Active remediation via in-situ Proton Reduction Technology.
G	20			Complete Petroleum Investigation Field Work		Nov-19		
	20			Submit Draft Technical Memorandum		Feb-20		
G	20			Submit Final Technical Memorandum		May-20		

Team Goal	Current FY	Upcoming FY	Marine Corps Base Quantico Environmental Restoration Program Goals Updated 15 October 2019						
			SITE	GOAL/MILESTONE	DUR ⁽¹⁾	PLANNED DATE	REVISED DATE	ACTUAL DATE	COMMENTS
	20			Submit Draft Pre-Remedial Design Sampling UFP-SAP		Jun-20			
		21		Submit Final Pre-Remedial Design Sampling UFP-SAP		Nov-20			
		21		Complete Pre-Remedial Design Sampling		Mar-21			
		22		Submit Draft Remedial Design		Dec-21			Path forward TBD; petroleum investigation needed prior to remedial design
		22		Submit Final Remedial Design		Jun-22			
		23		Submit Draft Performance Monitoring UFP-SAP		Nov-22			
		23		Submit Final Performance Monitoring UFP-SAP		Mar-23			
		23		RA Start		Apr-23			
		24		Complete Year 1 Sampling		Apr-24			
		25		Submit Draft Year 1 Performance Monitoring Report		Oct-24			
		25		Submit Final Year 1 Performance Monitoring Report		Feb-25			
		25		Complete Year 2 Sampling		Apr-25			
		26		Submit Draft Year 2 Performance Monitoring Report		Oct-25			
		26		Submit Final Year 2 Performance Monitoring Report		Feb-26			
		26		Complete Year 3 Sampling		Apr-26			
		27		Submit Draft Year 3 Performance Monitoring Report		Oct-26			
		27		Submit Final Year 3 Performance Monitoring Report		Feb-27			
		27		Complete Year 4 Sampling		Apr-27			
		28		Submit Draft Year 4 Performance Monitoring Report		Oct-27			
		28		Submit Final Year 4 Performance Monitoring Report		Feb-28			
		28		Submit Draft Remedial Action Completion Report		Mar-28			
		28		Submit Final Remedial Action Completion Report		Aug-28			
		28		Response Complete		Aug-28			NORM RC date is 9/30/2028.
			IRP Site 105	Soil Areas - OU 38					Site includes the the soil areas upgradient of and adjacent to the SWP drainage channel. Site 105 (former Site 99 soil areas) is being investigated for petroleum contamination addressed under Phase 2 (RI/FS) of the IRP. Exit Strategy - Delineate petroleum contamination and likely remove via excavation and offsite disposal.
	20			Submit Draft UFP-SAP for GW Delineation activities		Mar-20			
G	20			Submit Final UFP-SAP for GW Delineation activities		Aug-20			
		21		Complete additional GW delineation activities		Nov-20			
		21		Submit Draft Remedial Investigation Report for Soil Areas		Mar-21			Path forward TBD; may consider EE/CA and NTCRA to address soil contamination
		21		Submit Final Remedial Investigation Report for Soil Areas		Jul-21			
		22		Submit Draft Feasibility Study Report for Soil Areas		Oct-21			
		22		Submit Final Feasibility Study Report for Soil Areas		Feb-22			
		22		Submit Draft Proposed Plan for Soil Areas		Apr-22			Requires 9 month review time.
		23		Submit Final Proposed Plan for Soil Areas		Jan-23			
		23		Submit Draft ROD for Soil Areas		Mar-23			Requires 9 month review time.
		24		Submit Final ROD for Soil Areas		Dec-23			
		24		Obtain ROD Signatures		Jan-24			
		24		Submit Draft Remedial Design		May-24			
		24		Submit Final Remedial Design		Sep-24			
		25		RA Start		Dec-24			
		26		Submit Draft LUC Remedial Design for Soil Areas		Jun-26			
		27		Submit Final LUC Remedial Design for Soil Areas		Oct-26			
		27		Submit Draft Remedial Action Completion Report		Nov-26			
		27		Submit Final Remedial Action Completion Report		Mar-27			
		27		Response Complete		Mar-27			NORM RC date is 9/30/2026.
			MRP - UXO 001	Little Creek Skeet Range - OU42					Located north of the intersections of Fuller and Geiger Rd on the Mainside near the Medal of Honor Golf Course. Firing was directed to the west (towards the golf course). Range activities included shotgun shooting at launched targets between 1936 through mid 1940s. The SI fieldwork was conducted in spring 2010 and the SI report was finalized in 2011. A Supplemental SI report was finalized in June 2015 and it recommended that the site be nominated for the IRP because of non-MRP contaminants (mainly PAHs). UXO 001 is currently being investigated via an EE/CA under the MRP. Exit Strategy - EE/CA to delineate soil contamination, NTCRA for cleanup, and NFA DD.
	20		COMPLETED	Submit Draft EE/CA SAP		Oct-19		10/9/2019	Revised the investigation and cleanup plan for the site; no longer putting into the RI/FS track.
G	20			Submit Final EE/CA SAP		Mar-20			
G	20			EE/CA Fieldwork		Jul-20			
		20		Submit Draft EE/CA (NTCRA)		Sep-20			
		21		Submit Final EE/CA (NTCRA)		Feb-21			
		21		Submit Draft Action Memo (NTCRA)		Mar-21			

Team Goal	Current FY	Upcoming FY	Marine Corps Base Quantico Environmental Restoration Program Goals Updated 15 October 2019						
			SITE	GOAL/MILESTONE	DUR ⁽¹⁾	PLANNED DATE	REVISED DATE	ACTUAL DATE	COMMENTS
		21		Submit Final Action Memo (NTCRA)		Jul-21			
		22		Complete NTCRA		Jan-22			
		22		Submit Draft NTCRA Closeout Report		Mar-22			
		22		Submit Final NTCRA Closeout Report		Jul-22			
		22		Submit Draft Decision Document (NFA)		Aug-22			
		23		Submit Final Decision Document (NFA)		Dec-22			
		23		Response Complete		Dec-23			
			MRP - UXO 13A	81mm Mortar Range - Impact Area - OU 24					Located on the Mainside immediately west of the 1,000 Yard Range (UXO 004). Russel Road (formerly called Trunk Road) was constructed after use of the range was discontinued; the road intersects the MRS in an east to west direction. The impact area received ordnance from firing points (K1 through K3). A number of 75 mm shrapnel shells and casings and metallic debris were observed on the surface of the MRS during 2007 SI site visits. During completion of SI geophysical fieldwork in spring 2009, various MEC and/or MPPEH were found on the ground. The SI Report recommended the MRS proceed to an RI. The MRS is being investigated under the RI phase of the MRP. RI activities are currently being conducted for the MRS. Exit Strategy - TBD; Complete RI/FS and evaluate potential remedies for the site.
G	20			Submit Final UFP-SAP for Phase 2 RI (MC Sampling)		Oct-19			Tier II was engaged to support team for an on-time 45-day review of QAPP Addendum for MC sampling due to need to utilize large amount of expiring funds on fieldwork effort. As of 10/9/2019, the QAPP Addendum is not finalized and we are on Round 4 of EPA comments. Note: This QAPP Addendum is combined with UXO 13B and UXO 025.
	20			Start Phase 2 RI fieldwork		Nov-19			This fieldwork needs to be conducted Fall 2019/Winter 2020 to utilize expiring funds.
G	20			Complete Phase 2 RI fieldwork		Feb-20			
		21		Submit Draft RI Report		Dec-20			
		21		Submit Final RI Report		Jun-21			
		22		Submit Draft Feasibility Study Report		Dec-21			
		22		Submit Final Feasibility Study Report		Apr-22			
		22		Submit Draft Proposed Plan		Jul-22			Requires 9 month review time.
		23		Submit Final Proposed Plan		Apr-23			
		23		Submit Draft ROD		Jun-23			Requires 9 month review time.
		24		Submit Final ROD		Mar-24			
		24		Obtain ROD Signatures		Apr-24			
		25		Submit Draft Remedial Design		Oct-24			
		25		Submit Final Remedial Design		Jan-25			
		25		RA Start		Apr-25			All MRP RA's pushed to 2023 or later.
		26		Submit Draft Construction Completion Report		Oct-25			
		26		Submit Final Construction Completion Report		Mar-26			
		26		Submit Draft Remedial Design (for LUCs)		Oct-25			
		26		Submit Final Remedial Design (for LUCs)		Mar-26			
		26		Submit Draft Remedial Action Completion Report		May-26			
		26		Submit Final Remedial Action Completion Report		Sep-26			
		27		Response Complete		Dec-26			
			MRP - UXO 13B	81 mm Mortar Range - Firing Fans - OU 30					Firing fans associated with UXO 013 and UXO 020 extend across Chopawamsic Creek on the Mainside. The firing fans are being evaluated as one MRS. Geophysical fieldwork was conducted in spring 2009 and several anomalies that could potentially be MEC were identified in the creek near the mian impact area (UXO 013A). The land portion of the MRS is being investigated under the RI phase of the MRP. RI activities are currently being conducted for the MRS. Exit Strategy - TBD; complete RI/FS and evaluate potential remedies for the site.
G	20			Submit Final UFP-SAP for Phase 2 RI (MC Sampling)		Oct-19			Tier II was engaged to support team for an on-time 45-day review of QAPP Addendum for MC sampling due to need to utilize large amount of expiring funds on fieldwork effort. As of 10/9/2019, the QAPP Addendum is not finalized and we are on Round 4 of EPA comments. Note: This QAPP Addendum is combined with UXO 13B and UXO 025.
	20			Start Phase 2 RI fieldwork		Nov-19			This fieldwork needs to be conducted Fall 2019/Winter 2020 to utilize expiring funds.
G	20			Complete Phase 2 RI fieldwork		Feb-20			
		21		Submit Draft RI Report		Dec-20			
		21		Submit Final RI Report		Jun-21			
		22		Submit Draft Feasibility Study Report		Dec-21			
		22		Submit Final Feasibility Study Report		Apr-22			
		22		Submit Draft Proposed Plan		Jul-22			Requires 9 month review time.
		23		Submit Final Proposed Plan		Apr-23			
		23		Submit Draft ROD		Jun-23			Requires 9 month review time.
		24		Submit Final ROD		Mar-24			
		24		Obtain ROD Signatures		Apr-24			
		25		Submit Draft Remedial Design		Oct-24			
		25		Submit Final Remedial Design		Jan-25			
		25		RA Start		Apr-25			All MRP RA's pushed to 2023 or later.

Team Goal	Current FY	Upcoming FY	Marine Corps Base Quantico Environmental Restoration Program Goals Updated 15 October 2019						
			SITE	GOAL/MILESTONE	DUR ⁽¹⁾	PLANNED DATE	REVISED DATE	ACTUAL DATE	COMMENTS
		26		Submit Draft Construction Completion Report		Oct-25			
		26		Submit Final Construction Completion Report		Mar-26			
		26		Submit Draft Remedial Design (for LUCs)		Oct-25			
		26		Submit Final Remedial Design (for LUCs)		Mar-26			
		26		Submit Draft Remedial Action Completion Report		May-26			
		26		Submit Final Remedial Action Completion Report		Sep-26			
		27		Response Complete		Dec-26			
			MRP - UXO 13C & D	UXO 013C - 81 mm Mortar Range - Firing Point K2 UXO 013D - 81 mm Mortar Range - Firing Point K3					Firing Point K2 (UXO 013C) and Firing Point K3 (UXO 013D) are located on the Mainside in a low lying marshy area of Chopawamsic Creek west of Range Road and the Marine Corps Air Facility. The locaiton of these firing points were confirmed based on a review of historical aerial photographs but no evidence of them were observed during the 2007 SI site visits. A UXO detector-aided sweep was conducted in spring 2009, MC sampling was completed in summer 2010, and SI report finalized in 2011. A supplemental SI was completed to address outstanding issues; however, additional investigation of subsurface anomalies and debris is needed. The MRSs is currently being investigated under the SI phase of the MRP. Exit Strategy - TBD; conduct a phase 2 Expanded SI to determine path forward for these sites.
	20			Submit Draft Phase 2 SI UFP-SAP (MC)		Jun-20			Scope and schedule for site added. May need to open new site given UXO 013C/D are not in the same investigation phase as UXO 013A/B and is causing funding issues within NORM.
		21		Submit Final Phase 2 SI UFP-SAP (MC)		Oct-20			
		21		Complete Phase 2 SI Fieldwork		Jan-21			
		21		Submit Draft Phase 2 SI Report		Jul-21			
		22		Submit Final Phase 2 SI Report		Nov-21			
			MRP - UXO 018	Marine Corps Flying Field Bombing Targets - OU 37					Marine Corps Flying Field Bombing Targets No. 1 through No. 5 were previously represented by MRP sites UXO 014 through UXO 018. All five of the sites were previously closed in 2010; however, all five have been reopened through UXO 018 following the discovery of munitions at Bombing Target No. 1 and Bombing Target No. 5. All existing documentation indicates that "non-explosive bombs" were used at the five targets. An SI was previosuly completed in 2007. Based on recent discovery of munitions, additional investigation of subsurface anomalies and debris is needed. Funding anticipated for FY2020.
		21		Submit Draft RI Work Plan		Dec-20			
		21		Submit Final RI Work Plan		Jun-21			
		22		Complete Phase 1A RI Fieldwork (DGM)		Dec-21			Actual path forward TBD until RI complete.
		22		Complete Phase 1B RI Fieldwork (Intrusive Investigation)		Apr-22			
		22		Submit Draft UFP-SAP for Phase 2 RI (MC Sampling)		Aug-22			
		23		Submit Final UFP-SAP for Phase 2 RI (MC Sampling)		Dec-22			
		23		Complete Phase 2 RI fieldwork		Apr-23			
		23		Submit Draft RI Report		Sep-23			
		24		Submit Final RI Report		Feb-24			
		24		Submit Draft Feasibility Study Report		Jun-24			
		25		Submit Final Feasibility Study Report		Oct-24			
		25		Submit Draft Proposed Plan		Jan-25			Requires 9 month review time.
		26		Submit Final Proposed Plan		Oct-25			
		26		Submit Draft ROD		Dec-25			Requires 9 month review time.
		26		Submit Final ROD		Sep-26			
		27		Obtain ROD Signatures		Oct-26			
		27		Submit Draft Remedial Design		Jan-27			
		27		Submit Final Remedial Design		May-27			
		27		RA Start		Aug-27			
		28		Submit Draft Construction Completion Report		Feb-28			
		28		Submit Final Construction Completion Report		Jun-28			
		28		Submit Draft Remedial Design (for LUCs)		Feb-28			
		28		Submit Final Remedial Design (for LUCs)		Jun-28			
		28		Submit Draft Remedial Action Completion Report		Aug-28			
		29		Submit Final Remedial Action Completion Report		Dec-28			
		29		Response Complete		Dec-28			NORM RC date is 3/31/2028
			MRP - UXO 19	Grenade Field (AKA Grenade Course) - OU 31					Located immediately adjacent (south) to McCard Road on the Mainside. A portion of the MRS is located within the boundaries of UXO 007. The range was constructed during World War 1 and ws used for hand and rifle grenade training activities. The MRS has been developed and is currently an equipment laydown area, which supports electrical services at the MCBQ. A grenade componet (launch tube and fuse) was discovered near the range during the 2007 SI site visit; addition MEC and/or MPPEH were found during the SI geophysical fieldwork in 2009. The MCBQ EOD removed the MEC items that were found during 2007. The MRS is being investigated under the RI phase of the MRP. RI activities are currently being conducted for the MRS. Exit Strategy - TBD; complete RI/FS and evaluate potential remedies for the site.
G	20			Complete follow on DGM Investigation		Oct-19			
	20			Submit Draft RI Report		Jun-20			
		21		Submit Final RI Report		Dec-20			

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			SITE	GOAL/MILESTONE	DUR ⁽¹⁾	PLANNED DATE	REVISED DATE	ACTUAL DATE	COMMENTS
		21		Submit Draft FS Report		Jul-21			
		22		Submit Final FS Report		Nov-21			
		22		Submit Draft Proposed Plan		Feb-22			Requires 9 month review time.
		23		Submit Final Proposed Plan		Nov-22			
		23		Submit Draft ROD		Jan-23			Requires 9 month review time.
		24		Submit Final ROD		Oct-23			
		24		Obtain ROD Signatures		Nov-23			
		24		Submit Draft Remedial Design		Apr-24			
		24		Submit Final Remedial Design		Aug-24			
		25		RA Start		Nov-24			All MRP RA's pushed to 2023 or later.
		25		Submit Draft Construction Completion Report		Apr-25			
		25		Submit Final Construction Completion Report		Aug-25			
		26		Submit Draft Remedial Design (for LUCs)		Apr-26			
		26		Submit Final Remedial Design (for LUCs)		Sep-26			
		27		Submit Draft Remedial Action Completion Report		Nov-26			
		27		Submit Final Remedial Action Completion Report		Mar-27			
		26		Response Complete		Aug-26			
			MRP - UXO 21	Combat Area C Field Firing Range - OU 32					Located in the western quadrant of the Mainside near Purvis Road. Small arms range activities are known to have occurred in the central portion of the MRS. Based on a review of historical aerial photos, range activities (including artillery, mortar, and grenade firing) may also have occurred in the northern portion of the MRS near the Russell Elementary School and the Child Youth Development Center. Estimated period of use for the MRS was 1937 to 1943. In 2001, two 81mm mortars and a 3-inch Stokes mortar were discovered. MEC and/or MPPEH were also found during the geophysical SI fieldwork in 2009. The MCBQ EOD removed the MEC items that were found in 2001 and 2009. The MRS is being addressed under the RI phase of the MRP. A TCRA for surface MEC in the northern portion of the MRS was completed in 2011. The TCRA for the school footprint was completed in 2016. RI activities are ongoing for the MRS. Exit Strategy - Submit RI and evaluate cost effective remedies for the site.
G	20			Submit Final UFP-SAP for Phase 2 RI (MC Sampling)		Oct-19			Tier II was engaged to support team for an on-time 45-day review of QAPP Addendum for MC sampling due to need to utilize large amount of expiring funds on fieldwork effort. As of 10/9/2019, the QAPP Addendum is not finalized and we are on Round 4 of EPA comments. Note: This is the 2nd QAPP Addendum in EPA review.
	20			Start Phase 2 RI fieldwork		Nov-19			This fieldwork needs to be conducted to utilize expiring funds.
G	20			Complete Phase 2 RI fieldwork		Feb-20			
		21		Submit Draft RI Report		Dec-20			
		21		Submit Final RI Report		Jun-21			
		22		Submit Draft FS Report		Dec-21			
		22		Submit Final FS Report		Apr-22			
		22		Submit Draft Proposed Plan		Jul-22			Requires 9 month review time.
		23		Submit Final Proposed Plan		Apr-23			
		23		Submit Draft ROD		Jun-23			Requires 9 month review time.
		24		Submit Final ROD		Mar-24			
		24		Obtain ROD Signatures		Apr-24			
		25		Submit Draft Remedial Design		Oct-24			
		25		Submit Final Remedial Design		Jan-25			
		25		RA Start		Apr-25			
		26		Submit Draft Construction Completion Report		Oct-25			
		26		Submit Final Construction Completion Report		Mar-26			
		26		Submit Draft Remedial Design (for LUCs)		Oct-25			Interim LUCs for school and CDC will be done earlier than this for Base needs.
		26		Submit Final Remedial Design (for LUCs)		Mar-26			
		26		Submit Draft Remedial Action Completion Report		May-26			
		26		Submit Final Remedial Action Completion Report		Sep-26			
		27		Response Complete		Sep-26			NORM RC date is 9/30/2028.
			MRP - UXO 024	Combat Area E Field Firing Range					Located in the Engineers Test Area, an active training area of the MCBQ. A portion of the danger zone for the MRS is located outside the Engineers Test Area on the Mainside. In 2009, the QPMT signed MRP Consensus Agreement No. 1 stating that no action was required at the MRS. However, in 2011 the MCBQ Range Management Branch indicated that larger munitions may have been used at the range based on comon practices during the estimated period of use. An Amendment to the MRP Consensus Agreement No. 1 was developed to reopen the MRS and conduct an SI. An SI was completed in February 2014 and additional fieldwork was recommended by MARCORSYSCOM Exit Strategy - TBD; evaluate supplemental SI data to determine future course of action. Additional fieldwork (i.e., investigation of anomalies) recommended by MARCORSYSCOM.
				TBD		TBD			Scope and schedule development are needed, planned for FY20

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			SITE	GOAL/MILESTONE	DUR ⁽¹⁾	PLANNED DATE	REVISED DATE	
			MRP - UXO 25	Quantico Clubs MRS - OU 33				Located on Mainside, encompasses the Quantico Clubs, the Crossroads Inn, the entire length of UXO 004 and the marsh area south of the Quantico Clubs adjacent to Chopawamsic Creek. The MCBQ EOD removed mortars after they were discovered, and a removal action was conducted for white phosphorus. Possible range activities include grenade and artillery firing at UXO 004 are being addressed under this MRS. Estimated period of use for these activities was 1926 to 1952. The firing was directed west towards an impact area located within the boundaries of the range. Is suspected that the eastern portion of UXO 025, where mortars and white phosphorus were found, may have been used as a munitions disposal area. Hand and rifle grenades, 60mm mortars, 3-inch Stokes mortars, 81mm mortars, and 4.2-inch mortars may have been used or disposed at the MRS. During 2007 Si site visit, a 3-inch Stokes mortar was discovered along the toe of the bank southwest of Crossroads Inn. This item was removed by MCBQ EOD. No additional MEC or MPPEH were discovered during the SI geophysical fieldwork in 2009. However, subsurface anomalies potentially representing MEC or MPPEH were identified during the geophysical survey. SI report recommended the completion of an RI. The MRS is being investigated under the RI phase of the MRP. RI activities are currently being conducted for the MRS. Exit Strategy - TBD; complete RI/FS and evaluate potential remedies for the site.
G	20			Submit Final UFP-SAP for Phase 2 RI (MC Sampling)		Oct-19		Tier II was engaged to support team for an on-time 45-day review of QAPP Addendum for MC sampling due to need to utilize large amount of expiring funds on fieldwork effort. As of 10/9/2019, the QAPP Addendum is not finalized and we are on Round 4 of EPA comments. Note: This QAPP Addendum is combined with UXO 013A and 013B.
	20			Start Phase 2 RI fieldwork		Nov-19		This fieldwork needs to be conducted Fall 2019/Winter 2020 to utilize expiring funds.
G	20			Complete Phase 2 RI fieldwork		Feb-20		
	21			Submit Draft RI Report		Dec-20		
	21			Submit Final RI Report		Jun-21		
	22			Submit Draft Feasibility Study Report		Dec-21		
	22			Submit Final Feasibility Study Report		Apr-22		
	22			Submit Draft Proposed Plan		Jul-22		Requires 9 month review time.
	23			Submit Final Proposed Plan		Apr-23		
	23			Submit Draft ROD		Jun-23		Requires 9 month review time.
	24			Submit Final ROD		Mar-24		
	24			Obtain ROD Signatures		Apr-24		
	25			Submit Draft Remedial Design		Oct-24		
	25			Submit Final Remedial Design		Jan-25		
	25			RA Start		Apr-25		All MRP RA's pushed to 2023 or later.
	26			Submit Draft Construction Completion Report		Oct-25		
	26			Submit Final Construction Completion Report		Mar-26		
	27			Submit Draft Remedial Design (for LUCs)		Oct-25		
	27			Submit Final Remedial Design (for LUCs)		Mar-26		
	27			Submit Draft Remedial Action Completion Report		May-26		
	27			Submit Final Remedial Action Completion Report		Sep-26		
	27			Response Complete		Mar-27		
			MRP - UXO 26	Chopawamsic Creek Skeet Range No.1 - OU 34				Located along the bank of Chopawamsic Creek and extends out into the creek. Range activities included shotgun shooting at launched targets. As part of the RI activities at IRP Site 100, sediment samples were collected from the creek and marsh areas along the creek. Some of these samples were collected within the boundaries of UXO 026. Lead, a primary MC of skeet ranges, was found in the sediment within UXO 026 at concentrations greater than background concentrations. The MRS is being investigated under the RI phase of the MRP. RI activities are planned for the MRS; however, funding for the RI activities needs to be obtained. Exit Strategy - Submit RI and evaluate cost effective remedies for the site.
	24			Submit Draft RI SAP		Feb-24		
	24			Submit Final RI SAP		Jun-24		
	24			Complete RI Fieldwork		Sep-24		
	25			Submit Draft RI Report		Jun-25		
	26			Submit Final RI Report		Oct-25		
	26			Submit Draft Feasibility Study Report		Jun-26		
	27			Submit Final Feasibility Study Report		Oct-26		
	27			Submit Draft Proposed Plan		Feb-27		Requires 9 month review time.
	28			Submit Final Proposed Plan		Nov-27		
	28			Submit Draft ROD		Dec-27		Requires 9 month review time.
	28			Submit Final ROD		Sep-28		
	29			Obtain ROD Signatures		Oct-28		
	29			RA Start		Jan-29		
	29			Submit Draft Remedial Action Completion Report		Jun-29		
	30			Submit Final Remedial Action Completion Report		Oct-29		
	30			Response Complete		Oct-29		NORM RC date is 3/31/2026
			MRP - UXO 28	Marine Corps Exchange (MCX) MRS				Extremely complex site logistically - NAVFAC and MCBQ is planning to consult to MARCORSYSCOM on path forward.
				TBD				Additional Fieldwork (Investigation of Anomalies Recommended by MARCORSYSCOM)

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			SITE	GOAL/MILESTONE	DUR ⁽¹⁾	PLANNED DATE	REVISED DATE	ACTUAL DATE	COMMENTS
			MRP - UXO 033	FBI Training Area 8 - OU 29					Centrally located within the Guad Area. The MRS covers approximately 400 acres of both developed and undeveloped (wooded areas). The FBI Academy is located within the boundaries of the MRS. The MRS lies within a portion of the suspected firing line and firing ran of Range 2, a former artillery and mortar range that was utilized from approximately 1943 to the mid-1950s. This training area was designated for use of all Division weapons in the MCBQ inventory. During a 2010 SI site reconnaissance, two illuminated rifle grenade flares were observed at the MRS in the area of the suspected firing line. The MRS is being addressed under the SI phase of the MRP. The SI fieldwork was Submit in February and March 2012, and the SI Report is currently being prepared. Exit Strategy - Evaluate SI/Submit RI and evaluate cost effective remedies for the site.
		23		Submit Draft RI UFP-SAP		Apr-23			
		23		Submit Final RI UFP-SAP		Jul-23			
		23		Complete Phase 1A RI Fieldwork (DGM)		Sep-23			
		24		Complete Phase 1B RI Fieldwork (Intrusive Investigation)		Feb-24			
		24		Submit Draft UFP-SAP for Phase 2 RI (MC Sampling)		Jun-24			
		25		Submit Final UFP-SAP for Phase 2 RI (MC Sampling)		Oct-24			
		25		Complete Phase 2 RI fieldwork		May-25			
		26		Submit Draft RI Report		Oct-25			
		26		Submit Final RI Report		Feb-26			
		26		Submit Draft Feasibility Study Report		May-26			
		26		Submit Final Feasibility Study Report		Sep-26			
		27		Submit Draft Proposed Plan		Dec-26			Requires 9 month review time.
		27		Submit Final Proposed Plan		Sep-27			
		28		Submit Draft ROD		Oct-27			Requires 9 month review time.
		28		Submit Final ROD		Jul-28			
		28		Obtain ROD Signatures		Aug-28			
		29		Submit Draft Remedial Design		Dec-28			
		29		Submit Final Remedial Design		Apr-29			
		30		RA Start		Oct-29			
		30		Submit Draft Construction Completion Report		Apr-30			
		30		Submit Final Construction Completion Report		Aug-30			
		31		Submit Draft Remedial Design (for LUCs)		Apr-31			
		31		Submit Final Remedial Design (for LUCs)		Aug-31			
		32		Submit Draft Remedial Action Completion Report		Oct-31			
		32		Submit Final Remedial Action Completion Report		Feb-32			
		32		Response Complete		Feb-32			NORM RC date is 3/31/2030
			MRP - UXO 034	Lunga Recreation Area South - OU 27					The MRS lies within a portion of the suspected firing fan of Range 2, a former artillery and mortar range that was utilized from approximately 1943 to the mid-1950s. This training area was designated for use of all Division weapons in the MCBQ inventory. The SI Report recommended an RI for the MRS due to numerous MEC/MPPEH surface items identified including 2.36 inch rockets and 81mm mortar fins. A TCRA was conducted by Shaw Environmental in April through October 2012 based on the initial munitions findings from the SI. A TCRA was performed in the Summer of 2013 by USA Environmental primarily consisting of surface clearance, due to the unanticipated density of subsurface anomalies encountered. A Phase I RI for generating a list of subsurface geophysical anomalies as potential MEC/MPPEH for a future NTCRA was initiated in January 2014. The NTCRA was conducted September 2015 - December 2016. The Phase 2 RI approach for MC will be developed with fieldwork anticipated for 2020. Exit Strategy - LUCs; need to complete CERCLA investigation (RI through ROD) and associated documentation.
		20		Submit Draft Construction Completion Report Addendum		Oct-19			
G		20		Submit Final Construction Completion Report Addendum		Feb-20			
		20		Submit Draft RI UFP-SAP for Phase II (MC sampling)		Sep-20			Need to wait on evaluation of the NTCRA results prior to holding the Phase II RI scoping.
		21		Submit Final RI UFP-SAP for Phase II (MC sampling)		Jan-21			
		21		Complete Phase II Fieldwork		Jun-21			
		22		Submit Draft RI Report (Phase I and II)		Nov-21			
		22		Submit Final RI Report (Phase I and II)		Mar-22			
		22		Submit Draft Feasibility Study		Jul-22			Need for FS is TBD based on MC sampling.
		23		Submit Final Feasibility Study		Nov-22			
		23		Submit Draft Proposed Plan		Jan-23			Requires 9 month review time.
		24		Submit Final Proposed Plan		Oct-23			
		24		Submit Draft ROD		Dec-23			Requires 9 month review time.
		24		Submit Final ROD		Sep-24			
		25		Obtain ROD Signatures		Oct-24			
		25		Submit Draft Remedial Design (for LUCs)		Dec-24			Interim land use controls to be prepared for base needs before ROD.
		25		Submit Final Remedial Design (for LUCs)		Jun-25			
		25		Submit Draft Remedial Action Completion Report		Sep-25			
		26		Submit Final Remedial Action Completion Report		Jan-26			

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			SITE	GOAL/MILESTONE	DUR ⁽¹⁾	PLANNED DATE	REVISED DATE	ACTUAL DATE	COMMENTS
		25		Response Complete		Sep-25			
			MRP - UXO 035	Lunga Reservoir - OU 39					The MRS covers approximately 520 acres of former range area within Lunga Reservoir and is adjacent to Lunga Recreation Area land-based MRSs UXO 034, UXO 038, and UXO 039. To date, numerous UXO, such as mortars, rockets, artillery projectiles and grenades, have been recovered on land and in the water at Lunga Recreational Area. The recreational area is currently closed for public use, pending ongoing investigations and removal actions. Currently, a TCRA is being conducted along the shoreline to support future reopening of UXO 034. The underwater RI is scheduled to begin in FY2022. Exit Strategy - TBD; no funding planned until 2022.
		23		Submit Draft RI Work Plan		Feb-23			All water sites pushed to 2023 and later.
		23		Submit Final RI Work Plan		Jun-23			
		23		Complete RI Fieldwork		Sep-23			
		24		Submit Draft RI Report		Jun-24			
		25		Submit Final RI Report		Oct-24			
		25		Submit Draft Feasibility Study		Jun-25			
		26		Submit Final Feasibility Study		Oct-25			
		26		Submit Draft Proposed Plan		Feb-26			Requires 9 month review time.
		27		Submit Final Proposed Plan		Nov-26			
		27		Submit Draft ROD		Dec-26			Requires 9 month review time.
		27		Submit Final ROD		Sep-27			
		28		Obtain ROD Signatures		Oct-27			
		28		Submit Draft Remedial Design		Apr-28			
		28		Submit Final Remedial Design		Aug-28			
		29		RA Start		Feb-29			
		30		Submit Draft Remedial Design (for LUCs)		Jan-30			
		30		Submit Final Remedial Design (for LUCs)		May-30			
		30		Submit Draft Remedial Action Completion Report		Jul-30			
		31		Submit Final Remedial Action Completion Report		Nov-30			
		31		Response Complete		Jan-31			
			MRP - UXO 036	Grenade Pit - OU 40					This site was reportedly located within Training Area 8B and is 12 acres in size. It also encompasses former IR Site 2, Asbestos Disposal Area. Grenades were found during utility trenching, at which point work was stopped and utilities were relocated. The trench was backfilled with soil. It appears to be a munitions disposal/open burn area from previous range cleanups and may also contain asbestos. The site is currently in the RI/FS phase with the RI slated to begin in FY20. Exit Strategy- TBD; RI required to determine future actions.
G	20			Submit Draft RI Work Plan		Dec-19			
	20			Submit Final RI Work Plan		Apr-20			
	20			Complete Phase 1A RI Fieldwork (DGM)		Jul-20			
		21		Complete Phase 1B RI Fieldwork (Intrusive Investigation)		Dec-20			
		21		Submit Draft UFP-SAP for Phase 2 RI (MC Sampling)		Apr-21			
		21		Submit Final UFP-SAP for Phase 2 RI (MC Sampling)		Aug-21			
		22		Complete Phase 2 RI fieldwork		Feb-22			
		22		Submit Draft RI Report		Jul-22			
		23		Submit Final RI Report		Nov-22			
		23		Submit Draft Feasibility Study		Mar-23			
		23		Submit Final Feasibility Study		Jul-23			
		23		Submit Draft Proposed Plan		Sep-23			Requires 9 month review time.
		24		Submit Final Proposed Plan		Jun-24			
		24		Submit Draft ROD		Aug-24			Requires 9 month review time.
		25		Submit Final ROD		May-25			
		25		Obtain ROD Signatures		Jun-25			
		25		Submit Draft Remedial Design		Sep-25			
		26		Submit Final Remedial Design		Jan-26			
		26		RA Start		Jul-26			
		28		Submit Draft Construction Completion Report		Oct-27			
		28		Submit Final Construction Completion Report		Feb-28			
		28		Submit Draft LUC Remedial Design		May-28			
		28		Submit Final LUC Remedial Design		Sep-28			
		29		Submit Draft Remedial Action Completion Report		Nov-28			
		29		Submit Final Remedial Action Completion Report		Mar-29			

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			SITE	GOAL/MILESTONE	DUR ⁽¹⁾	PLANNED DATE	REVISED DATE	ACTUAL DATE	COMMENTS
		29		Response Complete		Sep-29			
			MRP - UXO 037	Chopawamsic Creek Range Fans - OU41					The site is comprised of the aquatic portions of the range fans from UXO 13 and UXO 24. Refer to UXO 013 and 024 information above for site history. This site is currently in the RI/FS phase. Exit Strategy- TBD; no funding until 2024.
		24		Submit Draft RI Work Plan		Sep-24			All water sites push to 2023 and later.
		25		Submit Final RI Work Plan		Jan-25			
		25		Complete RI Fieldwork		May-25			
		26		Submit Draft RI Report		Nov-25			
		26		Submit Final RI Report		Mar-26			
		26		Submit Draft Feasibility Study		Jul-26			
		27		Submit Final Feasibility Study		Nov-26			
		27		Submit Draft Proposed Plan		Jan-27			Requires 9 month review time
		28		Submit Final Proposed Plan		Oct-27			
		28		Submit Draft ROD		Nov-27			Requires 9 month review time
		28		Submit Final ROD		Aug-28			
		28		Obtain ROD Signatures		Sep-28			
		29		Response Complete		Oct-28			NORM RC date is 3/31/2028
			MRP - UXO 038	Lunga Recreation Area Central - OU 35					The SI for UXO 038 was performed in 2012 with the SI Report completed in July 2013. In 2014, a TCRA was performed with surface clearance completed across approximately 34 acres. In September 2015 through March 2016, a RI was initiated at UXO 038 for subsurface metallic anomalies indicative of MPPEH using conventional digital geophysical mapping (DGM). The RI Report recommended that approximately 80 percent of the site is suitable for further investigation using AGC, and approximately 20 percent of the site is suitable for further investigation using traditional intrusive investigation methods. Due to 28,413 subsurface anomalies identified during Phase 1 of the RI, UXO 038 will undergo a treatability study to determine the best path forward. Exit Strategy - TBD; complete RI/FS and evaluate potential remedies for the site.
	20			Complete Treatability Study field work and reporting		Feb-20			
	20			Submit Draft Phase 1B MEC QAPP (intrusive investigation)		Apr-20			
	20			Submit Final Phase 1B MEC QAPP (intrusive investigation)		Sep-20			
		21		Complete Phase 1B fieldwork		Dec-20			
		21		Submit Draft Phase 2 RI UFP-SAP (MC Sampling)		Apr-21			
		21		Submit Final Phase 2 RI UFP-SAP (MC Sampling)		Aug-21			
		22		Complete Phase II Fieldwork		Nov-21			
		22		Submit Draft RI Report		May-22			
		22		Submit Final RI Report		Sep-22			
		23		Submit Draft Feasibility Study		Jan-23			Need for FS is TBD based on MC sampling.
		23		Submit Final Feasibility Study		May-23			
		23		Submit Draft Proposed Plan		Jul-23			Requires 9 month review time.
		24		Submit Final Proposed Plan		Apr-24			
		24		Submit Draft ROD		Aug-24			Requires 9 month review time.
		25		Submit Final ROD		May-25			
		25		Obtain ROD Signatures		Jun-25			
		25		Submit Draft Remedial Design		Sep-25			
		26		Submit Final Remedial Design		Jan-26			
		26		RA Start		May-26			All MRP RA's pushed to 2023 or later.
		27		Submit Draft Construction Completion Report		Aug-27			
		28		Submit Final Construction Completion Report		Dec-27			
		27		Submit Draft Remedial Design (for LUCs)		Aug-27			
		28		Submit Final Remedial Design (for LUCs)		Dec-27			
		28		Submit Draft Remedial Action Completion Report		Feb-28			
		28		Submit Final Remedial Action Completion Report		Jun-28			
		31		Response Complete		Feb-31			
			MRP - UXO 039	Lunga Recreation Area North - OU 36					The MRS is 158 acres and lies within a portion of the suspected firing fan of Range 1 estimated to have been used from 1943 to 1960s and Range 2 estimated to have been used from 1943 to the mid-1950s. The SI for UXO 038 was performed in 2012 with the SI Report completed in July 2013 (Tetra Tech, 2013). A limited surface survey was performed; no subsurface geophysics were performed. No munitions-related items were discovered during the investigation. An RI for characterizing the nature and extent of potential MEC across the MRS is underway. Exit Strategy - TBD; complete RI/FS and evaluate potential remedies for the site.
	20			Submit Draft Phase 2 RI UFP-SAP (MC Sampling)		Mar-20			
	20			Submit Final Phase 2 RI UFP-SAP (MC Sampling)		Jun-20			
		21		Complete Phase II Fieldwork		Nov-20			

Team Goal	Current FY	Upcoming FY	Marine Corps Base Quantico Environmental Restoration Program Goals Updated 15 October 2019						
			SITE	GOAL/MILESTONE	DUR ⁽¹⁾	PLANNED DATE	REVISED DATE	ACTUAL DATE	COMMENTS
		21		Submit Draft RI Report		Jul-21			
		22		Submit Final RI Report		Nov-21			
		22		Submit Draft Feasibility Study		Jan-22			Need for FS is TBD based on MC sampling.
		22		Submit Final Feasibility Study		May-22			
		22		Submit Draft Proposed Plan		Aug-22			Requires 9 month review time.
		23		Submit Final Proposed Plan		May-23			
		23		Submit Draft ROD		Aug-23			Requires 9 month review time.
		24		Submit Final ROD		May-24			
		24		Obtain ROD Signatures		Jun-24			
		25		Submit Draft Remedial Design		Oct-24			
		25		Submit Final Remedial Design		Feb-25			
		25		RA Start		May-25			All MRP RA's pushed to 2023 or later.
		26		Submit Draft Construction Completion Report		Jul-26			
		27		Submit Final Construction Completion Report		Nov-26			
		26		Submit Draft Remedial Design (for LUCs)		Jul-26			
		27		Submit Final Remedial Design (for LUCs)		Nov-26			
		27		Submit Draft Remedial Action Completion Report		Jan-27			
		27		Submit Final Remedial Action Completion Report		May-27			
		28		Response Complete		Nov-27			

Appendix I
Signature Page Dates for Pertinent
Environmental Restoration Program
Documents

Signature Dates of Pertinent Documents

The following tables contain the information relating to the signature names and dates of pertinent documents. Table I-1 provides information on Closeout Documents (including both IRP and MRP closeout documents). Table I-2 provides information on Five Year Reviews. Table I-3 provides the signature information for Records of Decision (RODs). Table I-4 provides the information for Action Memorandum. Table I-5 provides the signature information for Remedial Action Completion Reports (RACRs).

The signature dates provided herein are considered as a “work in progress” and based on currently available information in the Administrative Record for MCBQ. Dates that appear missing will be updated in future SMP documents.

Tables

Table I-1 Closeout Documents Signature Information Site
Management Plan
Marine Corps Base Quantico, Quantico, Virginia

Document Name	Site ID	Site Name	Signature Date	Signatures							
				Name	Organization	Name	Organization	Name	Organization	Name	Organization
IRP Closeout Document No. 1	Site 35	CA-33 – Building 2208 Accumulation Area	5/30/2001	Andrew Gutberlet	EFA Chesapeake	Lisa Bradford	USEPA Region III	Steve Mihalko	Virginia DEQ	Matias Santiago	MCCDC Quantico, NREA Branch
	Site 58	AOC-H – Building 2208 Stained Area									
IRP Closeout Document No. 2	Site 36	CA-38 – Building 2006A Accumulation Area	7/10/2001	Andrew Gutberlet	EFA Chesapeake	Lisa M. Bradford	US EPA Region III	Stephen Mihalko	Virginia DEQ	Matias Santiago	MCCDC Quantico, NREA Branch
	Site 64	CA-06 – Building 24009 Accumulation Area No. 1									
	Site 65	CA-07 – Building 24009 Accumulation Area No. 2									
	Site 66	CA-08 – Building 24009 Accumulation Area No. 3									
	Site 74	CA-35 – Building 2013 Accumulation Area No. 1									
	Site 75	CA-36 – Building 2013 Accumulation Area No. 2									
	Site 79	CA-44 – Building 2013 Accumulation Area No. 3									
	BA-02	Building 2013 Battery Workshop/Area									
	W-07	Building 2013 Washrack No. 1									
	Site 71	CA-24 – Building 5107 Accumulation Area									
IRP Closeout Document No. 3	APS-6B	Russell Road Clear Cut	8/30/2001	Andrew Gutberlet	EFA Chesapeake	Lisa M. Bradford	US EPA Region III	Stephen Mihalko	Virginia DEQ	Matias Santiago	MCCDC Quantico, NREA Branch
	Site 38	CA-34 - Building 3066 Accumulation Area									
	BA-08	Building 3063 Battery Accumulation Area									
	Site 40	CA-20 - Building 2130 Accumulation Area									
	Site 55	AOC B - Building 3252 Stressed Area									
	Site 69	CA-32 - Building 3252 Paint Shop Accumulation Area									
	Site 78	CA-43 - Building 3034 Accumulation Area									
	Site 70	CA-01 - Building 27002 Accumulation Area									
	Site 88	L-34 - Building 27002 Disposal Yard									
	Site 24	APS-10 - Guadalcanal Maintenance Disposal Area									
	L-35	Building 27002 Guadalcanal Disposal Trench									
	L-36	Building 27002 Temporary Storage Yard									
	Site 60	CA-02 - Building 27054 Accumulation Area No.1									
	Site 61	CA-03 - Building 27054 Accumulation Area No.2									
	Site 62	CA-04 - Building 27054 Accumulation Area NO.3									
	Site 63	CA-05 - Building 27054 Accumulation Area No.4									
	Site 68	BA-01 - Building 27054 Battery Work Area									
IRP Closeout Document No. 4	Site 42	CA-25 - Mainside Sewage Treatment Plant (STP) Accumulation Area	10/3/2001	Andrew Gutberlet	EFA Chesapeake	Lisa M. Bradford	US EPA Region III	Stephen Mihalko	Virginia DEQ	Matias Santiago	MCCDC Quantico, NREA Branch
	Site 37	CA-45 - Murphy Demo Area Accumulation Area									
	Site 89	M-15 - South Coal Yard									
	Site 90	M-16 - North Coal Yard									
	Site 92	M-20 - Building 3063 Abandoned Degreaser									
IRP Closeout Document No. 5	O-07	Building 3220 Oil/Water Separator	10/3/2001	Andrew Gutberlet	EFA Chesapeake	Lisa M. Bradford	US EPA Region III	Stephen Mihalko	Virginia DEQ	Matias Santiago	MCCDC Quantico, NREA Branch
	BA-03	Building 24009 Battery Workshop									
	BA-06	Building 24009 Battery Accumulation Area No. 1									
	BA-07	Building 24009 Battery Accumulation Area No. 2									
	W-03	Building 24009 Washrack									
	T-01	Building 24009 Trench No. 1									
	M-30	Building 24009 Settling Pit									
	T-02	Building 24009 Trench No. 2									

Table I-1 Closeout Documents Signature Information Site
Management Plan
Marine Corps Base Quantico, Quantico, Virginia

Document Name	Site ID	Site Name	Signature Date	Signatures							
				Name	Organization	Name	Organization	Name	Organization	Name	Organization
IRP Closeout Document No. 6	W-14	Building 27002 Wash rack	11/8/2001	Andrew Gutberlet	EFA Chesapeake	Lisa M. Bradford	US EPA Region III	Stephen Mihalko	Virginia DEQ	Matias Santiago	MCB Quantico, NREA Branch
	TA-02	Building 27054 Tank No. 1									
	TA-03	Building 27054 Tank No. 2									
	TA-04	Building 27054 Tank No. 3									
	D-04	Building 2103 Dry Paint Booth									
	T-07	Building 2103 Trench No. 1									
	T-08	Building 2103 Trench No. 2									
	L-15	T-58 Engine Test Pad									
	CA-42	Building 3045 Accumulation Area									
	W-13	Building 3045 Wash rack									
	BA-05	Building 3230 Battery Workshop									
	B-06	Building 2091									
	B-09	Building 3037									
	CA-37	Building 2008 Accumulation Area									
	CA-39	Building 3035 Accumulation Area									
	CA-51	Building Mainside Gas Station Accumulation Area									
	M-18	Building 3090 Sink									
	M-19	Building 2205 Pathological Incinerator									
	M-35	Building 2009 Silver Recovery Units Accumulation Area									
	W-12	Building 3016 Wash rack									
	T-09	Building 3016 Trench									
IRP Closeout Document No. 7	Site 39	CA-28 - Building 28000 Accumulation Area No. 1	12/11/2001	Andrew Gutberlet	EFA Chesapeake	Lisa M. Bradford	US EPA Region III	Stephen Mihalko	Virginia DEQ	Matias Santiago	MCCDC Quantico, NREA Branch
	Site 46	CA-29 - Building 28000 Accumulation Area No. 2									
	Site 72	CA-30 - Building 28000 Accumulation Area No. 3									
	Site 91	M-17 - Building 28000 Former Drainage Channel									
	W-09	Building 28000 Washrack									
IRP Closeout Document No. 8	Site 14	L-32 - 1920s Landfill	1/16/2002	Andrew Gutberlet	EFA Chesapeake	Lisa M. Bradford	US EPA Region III	Stephen Mihalko	Virginia DEQ	Matias Santiago	MCCDC Quantico, NREA Branch
	Site 27	TP-47 – Camp Goettge Sewage Treatment Plant (STP)									
	Site 56	Area of Concern (AOC) F - Building 27054 Stained Area									
	Site 57	AOC G – Building 27054 Lube Storage Area									
	Site 48	AOC J – Building 3254 Stained Area									
	Site 87	L-11 – Building 3252 Temporary Waste Storage Area									
	B-05	Building 3254									
	W-10	Building 3252 Washrack									
IRP Closeout Document No. 9	O-09	Building 24009 Oil/Water Separator (OWS)	4/9/2002	Andrew Gutberlet	EFA Chesapeake	Lisa M. Bradford	US EPA Region III	Stephen Mihalko	Virginia DEQ	Matias Santiago	MCB Quantico, NREA Branch
	Site 44	CA-23 Building 2103 Accumulation Area									
	Site 51	APS-21 Landing Zone Woodpecker Cleared Area									
	O-01	Building 3045 Oil/Water Separator (OWS) No.1									
IRP Closeout Document No. 10	O-02	Building 3045 OWS No.2	4/9/2002	Andrew Gutberlet	EFA Chesapeake	Lisa M. Bradford	US EPA Region III	Stephen Mihalko	Virginia DEQ	Matias Santiago	MCB Quantico, NREA Branch
	B-04	Building 2142									
	BA-04	Building 2112 Battery Workshop									
	BA-12	Building 2112 Battery Accumulation Area									
	T-04	Building 2112 Trench									
	CA-18	Building 2112 Accumulation Area No. 1									
	CA-19	Building 2112 Accumulation Area No. 2									
	T-05	Building 2130 Trench									
	APS-05	Route 637 Cleared Area									

Table I-1 Closeout Documents Signature Information Site
Management Plan
Marine Corps Base Quantico, Quantico, Virginia

Document Name	Site ID	Site Name	Signature Date	Signatures							
				Name	Organization	Name	Organization	Name	Organization	Name	Organization
IRP Closeout Document No. 11	Site 59	B-03 - Building 2191	4/9/2002	Andrew Gutberlet	EFA Chesapeake	Lisa M. Bradford	US EPA Region III	Stephen Mihalko	Virginia DEQ	Matias Santiago	MCB Quantico, NREA Branch
IRP Closeout Document No. 12	Site 77	CA-41 - Building 2113 Accumulation Area No. 2	11/7/2001	Andrew Gutberlet	EFACHES	Lisa M. Bradford	USEPA Region III	Stephen Mihalko	Virginia DEQ	Matias Santiago	Marine Corps Base, NREA Branch
	Site 93	M-21 - Building 2113 Collection Sump No. 1									
	Site 94	M-22 - Building 2113 Collection Sump No. 2									
	D-02	Building 4 Dry Paint Booth									
	W-01	Building 4 Washrack									
IRP Closeout Document No. 13	Site 12	L-33 - Gravel Pit	3/7/2002	Andrew Gutberlet	EFACHES	Lisa M. Bradford	USEPA Region III	Stephen Mihalko	Virginia DEQ	Matias Santiago	Marine Corps Base, NREA Branch
	Site 29	TP-48 - Rifle Range Sewage Treatment Plant									
IRP Closeout Document No. 14	Site 54	CA-10 - Building 24007 Accumulation Area No. 1	5/16/2002	Andrew Gutberlet	EFA Chesapeake	Lisa M. Bradford	US EPA Region III	Stephen Mihalko	Virginia DEQ	Matias Santiago	MCB Quantico, NREA Branch
	Site 81	CA-48 - Building 24162									
	APS-4A	Ammo Storage Facility Cleared Area									
	APS-4B	Ammo Storage Facility Disturbed Ground									
	O-10	Building 3400 Oil/Water Separator (OWS)									
	TP-42	Camp Upshur Sludge Drying Bed No. 1									
	TP-43	Camp Upshur Sludge Drying Bed No. 2									
	TP-44	Camp Upshur Sludge Drying Bed No. 3									
IRP Closeout Document No. 15	Site 52	APS-06A - Russell Road Waste Disposal Area	6/6/2002	Andrew Gutberlet	EFACHES	Lisa M. Bradford	USEPA Region III	Stephen Mihalko	Virginia DEQ	Matias Santiago	Marine Corps Base, NREA Branch
IRP Closeout Document No. 16	M-14	Old Sludge Drying Bed	6/5/2002	Andrew Gutberlet	EFA Chesapeake	Lisa M. Bradford	US EPA Region III	Stephen Mihalko	Virginia DEQ	Matias Santiago	MCB Quantico, NREA Branch
	Site 47	CA-17 - Building 3230 Accumulation Area									
	Site 53	L-31 - Training Area 3 Disposal Area									
IRP Closeout Document No. 17	Site 11	L-29 - Rifle Range Disposal Area	9/4/2002	Andrew Gutberlet	EFACHES	Lisa M. Bradford	USEPA Region III	Stephen Mihalko	Virginia DEQ	Matias Santiago	Marine Corps Base, NREA Branch
IRP Closeout Document No. 18	Site 15	L-28 - Air Station Disposal Area	9/4/2002	Andrew Gutberlet	EFACHES	Lisa M. Bradford	USEPA Region III	Stephen Mihalko	Virginia DEQ	Matias Santiago	Marine Corps Base, NREA Branch
	Site 28	TP-45 - Old Brownfield Sewage Treatment Plant (including the Pistol Range)									
IRP Closeout Document No. 19	Site 22	APS-02A - Previous Burn Pits	9/4/2002	Andrew Gutberlet	EFACHES	Lisa M. Bradford	USEPA Region III	Stephen Mihalko	Virginia DEQ	Matias Santiago	Marine Corps Base, NREA Branch
IRP Closeout Document No. 20	Site 23	APS-02C - Interim Burn Pit and Fill Area	9/4/2002	Andrew Gutberlet	EFACHES	Lisa M. Bradford	USEPA Region III	Stephen Mihalko	Virginia DEQ	Matias Santiago	Marine Corps Base, NREA Branch
	L-12	New Burn Pit									
IRP Closeout Document No. 21	Site 97	Creosote Spill Site	7/12/2002	Andrew Gutberlet	EFACHES	Lisa M. Bradford	USEPA Region III	Stephen Mihalko	Virginia DEQ	Matias Santiago	Marine Corps Base, NREA Branch
IRP Closeout Document No. 22	Site 30	W-06 - Building 4 Washrack	7/9/2002	Andrew Gutberlet	EFACHES	Lisa M. Bradford	USEPA Region III	Stephen Mihalko	Virginia DEQ	Matias Santiago	Marine Corps Base, NREA Branch
	Site 45	CA-22 - Building 2101 Accumulation Area No. 2									
	Site 50	CA-21 - Building 2101 Accumulation Area No. 1									
	Site 76	CA-40 - Building 2113 Accumulation Area No. 1									
	AOC C	Building 4 East Apron									
	AOC D	Building 2113 Fuel Oil Tank Storage Area									
	M-09	Building 4 Waste Locker No. 1									
	M-10	Building 4 Waste Locker No. 2									
	M-11	Building 4 Waste Dumpster No. 1									
	M-12	Building 4 Waste Dumpster No. 2									
	O-06	Building 4 Oil/Water Separator									
	T-03	Building 4 Trench									
	TA-01	Building 2113 Underground Tank									

Table I-1 Closeout Documents Signature Information Site
Management Plan
Marine Corps Base Quantico, Quantico, Virginia

Document Name	Site ID	Site Name	Signature Date	Signatures							
				Name	Organization	Name	Organization	Name	Organization	Name	Organization
IRP Closeout Document No. 23	CA-13	Building 27942 Accumulation Area	7/18/2002	Andrew Gutberlet	EFA Chesapeake	Lisa M. Bradford	US EPA Region III	Stephen Mihalko	Virginia DEQ	Matias Santiago	MCB Quantico, NREA Branch
	CA-15	Building 10 Accumulation Area									
	CA-49	Building 5-9 Accumulation Area									
	D-01	Training Support and Service Unit (TSSU) Dry Paint Booth									
IRP Closeout Document No. 24	Site 03	L-21 - Dihydrate Burial Area	9/5/2002	Andrew Gutberlet	EFA Chesapeake	Lisa M. Bradford	US EPA Region III	Stephen Mihalko	Virginia DEQ	Matias Santiago	MCB Quantico, NREA Branch
	AOC K	Septic Tanks									
	APS-09	Landing Zone (LZ) Ostrich Cleared Area									
	APS-12	The Basic School (TBS) Southern Cleared Area									
	APS-13	Training Area (TA) 09B Northern Cleared Area									
	APS-17	Route 608 Cleared Area									
	CA-50	TBS Gas Station Accumulation Area									
	L-25	Camp Goettge									
	NA	Fire Training Area									
IRP Closeout Document No. 25	APS-18	Shooting Range Disposal Area	12/18/2002	Andrew Gutberlet	EFA Chesapeake	Lisa M. Bradford	US EPA Region III	Stephen Mihalko	Virginia DEQ	Matias Santiago	MCB Quantico, NREA Branch
IRP Closeout Document No. 26	NA	Quantico Creek	January 2003	Andrew Gutberlet	EFA Chesapeake	Lisa M. Bradford	US EPA Region III	Stephen Mihalko	Virginia DEQ	Matias Santiago	MCB Quantico, NREA Branch
IRP Closeout Document No. 27	Site 41	CA-27 - Camp Upshur Sewage Treatment Plant Accumulation Area	4/18/2003	Andrew Gutberlet	EFA Chesapeake	Lisa M. Bradford	US EPA Region III	Stephen Mihalko	Virginia DEQ	Matias Santiago	MCB Quantico, NREA Branch
	APS-08	Federal Bureau of Investigation (FBI) Academy Cleared Area									
	O-03	Building 21112 Oil/Water Separators (OWSs) A and B									
	O-04	Building 27263 OWS									
	T-10	Building 27054 Trench									
	APS-02B	Runway 20 Fill Area									
	CA-11	Building 27241 Accumulation Area									
	Site 43	CA-12 - Building 27214 Accumulation Area									
IRP Closeout Document No. 28	Site 49	APS-1 - Engineering Test Site Fill Areas	3/5/2003	Andrew Gutberlet	EFACHES	Lisa M. Bradford	USEPA Region III	Stephen Mihalko	Virginia DEQ	Matias Santiago	Marine Corps Base, NREA Branch
IRP Closeout Document No. 29	NA	Asbestos Burial Area No. 2	7/24/2003	Andrew Gutberlet	EFACHES	Lisa M. Bradford	USEPA Region III	Stephen Mihalko	Virginia DEQ	Matias Santiago	Marine Corps Base, NREA Branch
IRP Closeout Document No. 30	NA	Arsenic Burial Area No. 2	7/23/2003	Andrew Gutberlet	EFACHES	Lisa M. Bradford	USEPA Region III	Stephen Mihalko	Virginia DEQ	Matias Santiago	Marine Corps Base, NREA Branch
IRP Closeout Document No. 31	Site 21	APS-7 - Smith Lake Road Cleared Area	2/4/2004	Andrew Gutberlet	EFACHES	Lisa M. Bradford	USEPA Region III	Stephen Mihalko	Virginia DEQ	Kristine Stein	Marine Corps Base, NREA Branch
IRP Closeout Document No. 32	Site 34	CA-16 - Building 4 Accumulation Area	9/29/2004	Andrew Gutberlet	NAVFAC Washington	Lisa M. Bradford	USEPA Region III	Stephen Mihalko	Virginia DEQ	Kristine Stein	MCB, NREA Branch
IRP Closeout Document No. 33	Site 13	Soild Waste Management Unit (SWMU) L-09 - Battery Acid Disposal Area [Construction, Equipment, and Repair (CER) Battery Area]	3/17/2005	Andrew Gutberlet	NAVFAC Washington	Lisa M. Bradford	USEPA Region III	Stephen Mihalko	Virginia DEQ	Kristine Stein	MCB, NREA Branch
IRP Closeout Document No. 34	SWMU M-04	The Basic School (TBS) Gas Station Battery Draining Pit (TBS Battery Site)	3/17/2005	Andrew Gutberlet	NAVFAC Washington	Lisa M. Bradford	USEPA Region III	Stephen Mihalko	Virginia DEQ	Kristine Stein	MCB, NREA Branch
IRP Closeout Document No. 35	Site 101	Potomac River	June 2006	Andrew Gutberlet	NAVFAC Washington	Lisa M. Bradford	US EPA Region III	Stephen Mihalko	Virginia DEQ	David Garrity	MCB Quantico, NREA
IRP Closeout Document No. 36	Site 98	Golf Course Maintenance Area	8/2/2006	Andrew Gutberlet	NAVFAC Washington	Lisa M. Bradford	USEPA Region III	Stephen Mihalko	Virginia DEQ	David Garrity	Marine Corps Base, NREA Branch
IRP Closeout Document No. 37	Site 10	Camp Upshur Disposal Area	June 2007	Andrew Gutberlet	NAVFAC Washington	Lisa M. Cunningham	USEPA Region III	Stephen Mihalko	Virginia DEQ	David Garrity	Marine Corps Base, NREA Branch
IRP Closeout Document No. 38	Site 32	B-10 - Pesticide Control Building	June 2006	Andrew Gutberlet	NAVFAC Washington	Lisa M. Bradford	USEPA Region III	Stephen Mihalko	Virginia DEQ	David Garrity	Marine Corps Base, NREA Branch
IRP Amendment to Closeout Document No. 38	Site 32	B-10 - Pesticide Control Building	1/18/2012	Frederick Evans	NAVFAC Washington	Lisa M. Cunningham	USEPA Region III	Stephen Mihalko	Virginia DEQ	Maria N. Hoidal	MCBQ, NREA Branch
IRP Closeout Document No. 39	Site 33	TBS Northwest Training Area	June 2007	Andrew Gutberlet	NAVFAC Washington	Lisa M. Cunningham	USEPA Region III	Stephen Mihalko	Virginia DEQ	David Garrity	Marine Corps Base, NREA Branch
IRP Closeout Document No. 40	Site 8	SWMU L-24 - Camp Barrett Disposal Area	10/17/2007	Andrew Gutberlet	NAVFAC	Lisa M. Cunningham	USEPA Region III	Stephen Mihalko	Virginia DEQ	Major Ethan	Marine Corps Base,

Table I-1 Closeout Documents Signature Information Site
Management Plan
Marine Corps Base Quantico, Quantico, Virginia

Document Name	Site ID	Site Name	Signature Date	Signatures							
				Name	Organization	Name	Organization	Name	Organization	Name	Organization
MRP Closeout Document No. 40	Site 21	APS 7 - Smith Lake Road Cleared Area	10/17/2007	Andrew Gutberlet	Washington	Lisa M. Cunningham	USEPA Region III	Stephen Mihalko	Virginia DEQ	Bishop	NREA Branch
IRP Closeout Document No. 41	Site 9	L-27 - Camp Goettge Dispoal Area	10/17/2007	Andrew Gutberlet	NAVFAC Washington	Lisa M. Cunningham	USEPA Region III	Stephen Mihalko	Virginia DEQ	Major Ethan Bishop	Marine Corps Base, NREA Branch
IRP Closeout Document No. 42	NA	Merrimac Disposal Area	1/19/2011	Fred Evans	NAVFAC Washington	Lisa M. Cunningham	USEPA Region III	Stephen Mihalko	Virginia DEQ	Maria Raney	MCB, NREA Branch
IRP Confirmation Sampling Decision Document No. 1	Site 1	L-01 - Pesticide Burial Area	5/16/2002	Andrew Gutberlet	EFACHES	Lisa M. Bradford	USEPA Region III	Stephen Mihalko	Virginia DEQ	Matias Santiago	Marine Corps Base, NREA Branch
	L-17	Building 2427 Burn Area									
	L-18	Building 2427 Disposal Area									
	M-29	Building 2427 Drum Disposal Area									
	NA	Unnamed ancillary site									
MRP Closeout Document No. 1	UXO 005	0.22 Caliber Anti-Aircraft Range	September 2009	Kristen Harstad	NAVFAC Washington	Lisa M. Cunningham	USEPA Region III	Stephen Mihalko	Virginia DEQ	Maria Raney	MCB, NREA Branch
	UXO 011	Machine Gun Range									
MRP Closeout Document No. 2	UXO 009	Original Pistol Range	11/18/2009	Kristen Harstad	NAVFAC Washington	Lisa M. Cunningham	USEPA Region III	Stephen Mihalko	Virginia DEQ	Maria Raney	MCB, NREA Branch
	UXO 010	Replacement Pistol Range									
MRP Closeout Document No. 3	UXO 002	600 Yard Rifle Range South	9/9/2009	Kristen Harstad	NAVFAC Washington	Lisa M. Cunningham	USEPA Region III	Stephen Mihalko	Virginia DEQ	Maria Raney	MCB, NREA Branch
	UXO 003	600 Yard Rifle Range North									
	UXO 004	1,000 Yard Range									
	UXO 007	FBI Target Range (aka Former FBI Range)									
	UXO 008	600 Yard Polo Field Rifle Range									
MRP Closeout Document No. 4	UXO 027	Potomac River Firing Range	9/9/2009	Kristen Harstad	NAVFAC Washington	Lisa M. Cunningham	USEPA Region III	Stephen Mihalko	Virginia DEQ	Maria Raney	MCB, NREA Branch
	UXO 029	Chopawamsic Creek Skeet Range No.2									
MRP Closeout Document No. 5	UXO 020	Artillery Range	11/18/2009	Kristen Harstad	NAVFAC Washington	Lisa M. Cunningham	USEPA Region III	Stephen Mihalko	Virginia DEQ	Maria Raney	MCB, NREA Branch
MRP Closeout Document No. 6	UXO 014	Marine Corps Flying Field Bombing Target No. 1	August 2010	Fred Evans	NAVFAC Washington	Lisa M. Cunningham	USEPA Region III	Stephen Mihalko	Virginia DEQ	Maria Raney	MCB, NREA Branch
	UXO 015	Marine Corps Flying Field Bombing Target No. 2									
	UXO 016	Marine Corps Flying Field Bombing Target No. 3									
	UXO 017	Marine Corps Flying Field Bombing Target No. 4									
	UXO 018	Marine Corps Flying Field Bombing Target No. 5									
	UXO 030	Bore Sighting Range									
MRP Closeout Document No. 7	UXO 032	Camp Upshur Training Area 17	3/28/2012	Fred Evans	NAVFAC Washington	Lisa M. Cunningham	USEPA Region III	Stephen Mihalko	Virginia DEQ	Maria N. Hoidal	MCBQ, NREA Branch
MRP Closeout Document No. 8	UXO 006	1,000 Inch Landscape Range	1/18/2012	Fred Evans	NAVFAC Washington	Lisa M. Cunningham	USEPA Region III	Stephen Mihalko	Virginia DEQ	Maria N. Hoidal	MCBQ, NREA Branch
	UXO 012	Turner Field Skeet Range									
MRP Closeout Document No. 9	UXO 028	Marine Corps Exchange (MCX)	1/18/2012	Fred Evans	NAVFAC Washington	Lisa M. Cunningham	USEPA Region III	Stephen Mihalko	Virginia DEQ	Maria N. Hoidal	MCBQ, NREA Branch
MRP Closeout Document No. 10	UXO 031	Camp Barrett Training Areas 5 and 8	August 2016	Allison Cantu	NAVFAC Washington	Lisa Cunningham	USEPA Region III	Stephen Mihalko	Virginia DEQ	Brian Ventura	MCBQ, NREA Branch

Table I-2 Five Year Review Documents Signature Information Site
Management Plan
Marine Corps Base Quantico, Quantico, Virginia

Document	Site ID	Site Name	Signature		Concurrence			
			Name/Title	Date	EPA	Date	VDEQ	Date
First Five Year Review	Site 4	Old Landfill	J. Composto Brigadier General U.S. Marine Corps Commanding General, Marine Corps Base	3/31/2003	NA	NA	NA	NA
Second Five Year Review	Site 4	Old Landfill	Charles A. Dallachie Colonel, U.S. Marine Corps Commander, Marine Corps Base, Quantico	4/29/2008	James J. Burke, Director Hazardous Site Cleanup Division	6/5/2008	Durwod Willis Program Manager Federal Facilities Program	6/12/2008
Third Five Year Review	Site 4	Old Landfill	David W. Maxwell Colonel, U.S. Marine Corps Commander, Marine Corps Base, Quantico	10/1/2013	NA	NA	NA	NA
	Site 95	Building 2101 Paint Booth Sump						
	Site 96	Old Landfill Southern Wetlands						
	Site 99	Quantico Embayment						
	Site 100	Chopawamsic Creek						
Fourth Five Year Review	Site 4	Old Landfill	J.M. Murray Colonel, U.S. Marine Corps Commander Marine Corps Base Quantico	6/4/2018	Karen Melvin, Director Hazardous Site Cleanup Division EPA Region III	6/5/2018	Stephen Mihalko Rmedial Project Manager	6/5/2018
	Site 95	Building 2101 Paint Booth Sump						
	Site 96	Old Landfill Southern Wetlands						
	Site 99	Quantico Embayment						
	Site 100	Chopawamsic Creek						
	Site 104	Building 2113 Underground Tank Loading/Unloading Area						

NA - Not available

Table I-3 Record of Decision Documents Signature Information Site
Management Plan
Marine Corps Base Quantico, Quantico, Virginia

Document	Site ID	Site Name	Signature				Concurrence			
			Name/Title	Date	Name/Title	Date	VDEQ	Date	MDE	Date
Record of Decision for Old Landfill - Site 4 Interim Remedial Action	Site 4	Old Landfill	Brigadier General F.C. Wilson, USMC Commanding General Marine Corps Base, Quantico	10/3/1997	Abraham Ferdas Acting Director, Hazardous Waste Management Division U.S. Environmental Protection Agency, Region III	9/30/1997	NA	NA	Not applicable	
Site 1 - Pesticide Burial Area, Marine Corps Combat Development Command (MCCDC), Quantico, Virginia, Record of Decision	Site 1	Pesticide Burial Area	J.F. Cronin Major General U.S. Marine Corps Reserve Commanding General, Marine Corps Base	10/5/2000	Abraham Ferdas, Director Hazardous Site Cleanup Division USEPA - Region III	10/13/2000	Erica S. Dameron Office Director Remediation Programs	10/12/2000	Not applicable	
Site 5 - Old Batch Plant, Marine Corps Combat Development Command (MCCDC), Quantico, Virginia, Record of Decision	Site 5	Old Batch Plant	J.F. Cronin Major General U.S. Marine Corps Reserve Commanding General, Marine Corps Base	10/5/2000	Abraham Ferdas, Director Hazardous Site Cleanup Division USEPA - Region III	10/13/2000	NA	NA	Not applicable	
Site 17 - Arsenic Burial Area, Marine Corps Combat Development Command (MCCDC), Quantico, Virginia, Record of Decision	Site 17	Arsenic Burial Area	C. L. Stanley Major General U.S. Marine Corps Commanding General, Marine Corps Base	6/17/2001	Abraham Ferdas, Director Hazardous Site Cleanup Division U.S. EPA Region III	6/21/2001	NA	NA	Not applicable	
Record of Decision for Site 5 (L-04) - Old Batch Plant	Site 5	Old Batch Plant	Charles A. Dallachie Colonel, U.S. Marine Corps Commander Marine Corps Base, Quantico	6/29/2007	James J. Burke, Director Hazardous Site Cleanup Division USEPA - Region 3	7/3/2007	Chris Evans Office Director Remediation Programs	6/29/2007	Not applicable	
Record of Decision for Site 20 (L-37) - Former Rifle Range	Site 20	Former Rifle Range	Charles A. Dallachie Colonel, U.S. Marine Corps Commander Marine Corps Base Quantico	9/27/2007	James J. Burke, Director Hazardous Site Cleanup Division U.S. EPA Region 3	10/4/2007	Chris Evans, Director Office of Remediation Programs	9/28/2007	Not applicable	
Record of Decision for Site 4 - Old Landfill	Site 4	Old Landfill	Charles A. Dallachie Colonel, U.S. Marine Corps Commander Marine Corps Base, Quantico	11/19/2007	James J. Burke, Director Hazardous Site Cleanup Division EPA Region 3	12/20/2007	Chris M. Evans, Director Office of Remediation Programs	11/27/2007	Not applicable	
Record of Decision for Sites 8, 9, 10, 21, 32, 33, 34, and 98	Site 8	Camp Barrett Disposal Area	Charles A. Dallachie Colonel, U.S. Marine Corps Commander MCB, Quantico	8/24/2008	James J. Burke, Director Hazardous Site Cleanup Division USEPA Region 3	9/3/2008	Durwood Willis, Director Office of Remediation Programs	8/27/2008	Not applicable	
	Site 9	Camp Goettge Disposal Area								
	Site 10	Camp Upshur Disposal Area								
	Site 21	Smith Lake Road Cleared Area								
	Site 32	Pesticide Control Building								
	Site 33	The Basic School (TBS) Northwest Training Area								
	Site 34	Building 4 Accumulation Area								
Site 98	Golf Course Maintenance Area									
Record of Decision for Site 95 - Building 2101 Paint Booth Sump	Site 95	Building 2101 Paint Booth Sump	Charles A. Dallachie Colonel, U.S. Marine Corps Commander Marine Corps Base, Quantico	9/14/2008	James J. Burke, Director Hazardous Site Cleanup Division USEPA Region 3	9/30/2008	Durwood Willis, Director Office of Remediation Programs	9/23/2008	Not applicable	
Record of Decision for Site 100 - Chopawamsic Creek	Site 100	Chopawamsic Creek	R. L. Anderson Colonel, U.S. Marine Corps By direction of the Commander MCBQ	9/28/2011	Ronald J. Borsellino, Director Hazardous Site Cleanup Division USEPA Region 3	9/29/2011	Durwood Willis, Director Office of Remediation Programs	9/28/2011	Not applicable	
Record of Decision for Site 99 - Quantico Embayment and Site 96 - Old Landfill Southern Wetlands	Site 99	Quantico Embayment	R. L. Anderson Colonel, U.S. Marine Corps By direction of the Commander MCBQ	9/28/2011	Ronald J. Borsellino, Director Hazardous Site Cleanup Division USEPA Region 3	9/30/2011	Durwood Willis, Director Office of Remediation Programs	9/28/2011	Kim Lemaster, Chief VCP Statewide/Brownfields	9/30/2011
	Site 96	Old Landfill Southern Wetlands								
Record of Decision, SWMU M-13 - Building 2113 Underground Tank Loading/Unloading Area	SWMU M-13	Building 2113 Underground Tank Loading/Unloading Area	David W. Maxwell Colonel, U.S. Marine Corps MCBQ	9/24/2014	Cecil Rodrigues, Director Hazardous Site Cleanup Division USEPA Region 3	9/29/2014	NA	NA	Not applicable	

NA - Not available

Table I-4 Action Memorandum Documents Signature Information Site
Management Plan
Marine Corps Base Quantico, Quantico, Virginia

Document	Site ID	Site Name	Signature						Concurrence	
			Name/Title	Date	Name/Title	Date	Name/Title	Date	EPA	Date
Action Memorandum, Time-Critical Removal Action at Site 20, Former Rifle Range	Site 20	Former Rifle Range	Lt. Colonel Winchester, Commanding Officer By Direction MCCDC Quantico	6/22/1993	Frank Peters Manager, Env. Restoration Chesapeake Division NAVFACENGCOM	6/21/1993	--	--	NA	NA
Action Memorandum, Removal Action at Site 01, Pesticide Burial Area	Site 1	Pesticide Burial Area	Morris E. Tate, Acting Director, Facilities Division By Direction MCB, MCCDC Quantico	6/1/1994	Frank Peters Manager, Env. Restoration EFA Chesapeake NAVFACENGCOM	5/17/1994	--	--	NA	NA
Action Memorandum, Time-Critical Removal Action at Site 20, Former Rifle Range	Site 20	Former Rifle Range	LT. Col. Costa, USMC Director Facilities Division MCB, MCCDC, Quantico	7/7/1994	Frank Peters Manager, Env. Restoration Chesapeake Division NAVFACENGCOM	6/27/1997	--	--	NA	NA
Action Memorandum, Non-Time Critical Removal Action at Installation Restoration Program (IRP) Site 4, Old Landfill	Site 4	Old Landfill	Brigadier General E.C. Kelley, Jr, USMC Commanding General MCB, Quantico	8/14/1996	Frank Peters Environmental Restoration Manager EFA Chesapeake NAVFACENGCOM	7/25/1996	--	--	NA	NA
Action Memorandum for Site 20 - Former Rifle Range Ranges A through F	Site 20	Former Rifle Range	NA	NA	NA	NA	NA	NA	NA	NA
Action Memorandum for Site 34 (CA-16) - Building 4 Accumulation Area	Site 34	Building 4 Accumulation Area	Andrew Gutberlet EFA Chesapeake Washington, D.C.	3/8/2004	Kristine M. Stein Marine Corps Base, NREA Branch Quantico, VA	3/8/2004	J.M. Lowe Colonel, U.S. Marine Corps Commander Marine Corps Base, Quantico	3/8/2004	NA	NA
Action Memorandum for Site 5 (L-04) - Old Batch Plant	Site 5	Old Batch Plant	Andrew Gutberlet EFA Chesapeake Washington, D.C.	5/17/2004	Kristine M. Stein Marine Corps Base, NREA Branch Quantico, VA	5/17/2004	J.M. Lowe Colonel, U.S. Marine Corps Commander Marine Corps Base, Quantico	5/17/2004	NA	NA
Action Memorandum for Site 20 Former Rifle Range, Phase 2 - Unnamed Range and Borrow Pit	Site 20	Former Rifle Range	Andrew Gutberlet EFA Chesapeake Washington, D.C.	7/15/2004	Kristine M. Stein Marine Corps Base, NREA Branch Quantico, VA	7/15/2004	J.M. Lowe Colonel, U.S. Marine Corps Commander Marine Corps Base, Quantico	7/15/2004	NA	NA
Action Memorandum for Site 98 - Golf Course Maintenance Area	Site 98	Golf Course Maintenance Area	NA	NA	NA	NA	NA	NA	NA	NA
Action Memorandum for Site 10 (L-23) - Camp Upshur Disposal Area	Site 10	Camp Upshur Disposal Area	Andrew Gutberlet NAVFAC Washington Washington, D.C.	5/25/2005	Kristine M. Stein Marine Corps Base, NREA Branch Quantico, VA	5/25/2005	J.M. Lowe Colonel, U.S. Marine Corps Commander Marine Corps Base, Quantico	5/25/2005	NA	NA
Action Memorandum for Site 32 (B-10) - Pesticide Control Building	Site 32	Pesticide Control Building	Andrew Gutberlet NAVFAC Washington Washington, D.C.	5/25/2005	Kristine M. Stein Marine Corps Base, NREA Branch Quantico, VA	5/25/2005	J.M. Lowe Colonel, U.S. Marine Corps Commander Marine Corps Base, Quantico	5/25/2005	NA	NA
Action Memorandum for Site 33 (APS-11) - TBS Northwest Training Area	Site 33	TBS Northwest Training Area	Andrew Gutberlet NAVFAC Washington Washington, D.C.	5/25/2005	Kristine M. Stein Marine Corps Base, NREA Branch Quantico, VA	5/25/2005	J.M. Lowe Colonel, U.S. Marine Corps Commander Marine Corps Base, Quantico	5/25/2005	NA	NA
Action Memorandum for Site 8 (L-24) - Camp Barrett Disposal Area	Site 8	Camp Barrett Disposal Area	Andrew Gutberlet NAVFAC Washington Washington, D.C.	4/3/2006	David Garrity Marine Corps Base, NREA Branch Quantico, VA	4/3/2006	J.M. Lowe Colonel, U.S. Marine Corps Commander Marine Corps Base, Quantico	4/3/2006	NA	NA
Action Memorandum for Site 9 (L-27) - Camp Goettge Disposal Area	Site 9	Camp Goettge Disposal Area	Andrew Gutberlet Remedial Project Manager NAVFAC Washington Washington, D.C.	5/26/2006	David Garrity Remediation Program Manager Marine Corps Base, NREA Branch Quantico, VA	5/26/2006	Charles A. Dallachie Colonel, U.S. Marine Corps Commander Marine Corps Base, Quantico, VA	5/26/2006	NA	NA
Combat Area C Field Firing Range (UXO 021) Action Memorandum	UXO 021	Combat Area C Field Firing Range	D.J. Choike Colonel, U.S. Marine Corps Commander, Marine Corps Base, Quantico	3/11/2011	--	--	--	--	NA	NA
Action Memorandum for Time Critical Removal Action, UXO 034 - Lunga Recreation Area	UXO 034	Lunga Recreation Area	D.J. Choike Colonel, U.S. Marine Corps Commander, Marine Corps Base, Quantico	4/6/2012	--	--	--	--	NA	NA
Action Memorandum for Time Critical Removal Action, Site 95 - Building 2101 Paint Booth Sump	Site 95	Building 2101 Paint Booth Sump	R. L. Anderson Colonel, U.S. Marine Corps Chief of Staff, Marine Corps Base, Quantico	8/17/2012	--	--	--	--	NA	NA

Table I-4 Action Memorandum Documents Signature Information Site
Management Plan
Marine Corps Base Quantico, Quantico, Virginia

Document	Site ID	Site Name	Signature						Concurrence	
			Name/Title	Date	Name/Title	Date	Name/Title	Date	EPA	Date
Quantico Embayment (Site 99) Soil Areas Action Memorandum	Site 99	Soil Areas	David W. Maxwell Colonel, U.S. Marine Corps Commander Marine Corps Base, Quantico	8/26/2013	--	--	--	--	NA	NA
Action Memorandum for Time Critical Removal Action, UXO 034 (Lunga Recreation Area, Training Area 10) Operable Unit 35	UXO 034	Lunga Recreation Area, OU 35	David W. Maxwell Colonel, U.S. Marine Corps Commander, Marine Corps Base Quantico	2/26/2014	--	--	--	--	NA	NA
Action Memorandum for Time Critical Removal Action of Drums, UXO 034 (Lunga Recreation Area, Training Area 10), Operable Unit 27	UXO 034	Lunga Recreation Area, Training Area 10	David W. Maxwell Colonel, U.S. Marine Corps Commander, Marine Corps Base Quantico	11/7/2014	--	--	--	--	NA	NA
Action Memorandum for Muntions Response Site UXO 034 Lunga Recreation Area Training Area 10 Operable Until 27	UXO 034	Lunga Recreation Area Training Area 10	Joseph M. Murray Colonel, U.S. Marine Corps Commander, Marine Corps Base Quantico	8/19/2015	--	--	--	--	NA	NA
Action Memorandum for Time Critical Removal of Potential Munitions and Explosives of Concern, Russell Road Phase III Widening Area	NA	NA	J. M. Murray Colonel, U.S. Marine Corps Commander, Marine Corps Base Quantico	4/11/2016	--	--	--	--	Lisa M. Cunningham Remedial Project Manager	5/10/2016
Action Memorandum for Time Critical Removal of Potential Munitions and Explosives of Concern and Material Potentially Presentating an Explosive Hazard, Treatability Study Area at Munitions Response Site UXO 021 (Combat Area C - Field Firing Range)	UXO 021	Combat Area C Field Firing Range	J. M. Murray Colonel, U.S. Marine Corps Commander, Marine Corps Base Quantico	4/11/2016	--	--	--	--	Lisa M. Cunningham Remedial Project Manager	5/10/2016
Action Memorandum for Time Critical Removal of Munitions and Explosives of Concern on the Exposed Shoreline and Nearshore Lake Bed of Munitions Response Site Unexploded Ordnance 35 (UXO 035) Lunga Reservoir	UXO 035	Lunga Reservoir	J. M. Murray Colonel, U.S. Marine Corps Commander, Marine Corps Base Quantico	6/15/2017	--	--	--	--	Lisa M. Cunningham Remedial Project Manager	7/19/2017

NA - Not available

Table I-5 Remedial Action Completion Reports Signature Information Site
Management Plan
Marine Corps Base Quantico, Quantico, Virginia

Document	Site ID	Site Name	Signature			
			Name/Title	Date	Name/Title	Date
Remedial Action Completion Report, Site 96 - Southern Wetlands	Site 96	Southern Wetlands	Paul Leonard Acting Director Office of Federal Facilitiy Remedation and Site Assessment	9/29/2014		
Remedial Action Completion Report for Site 4 - Old Landfill	Site 4	Old Landfill	J.M. Murray Colonel, U.S. Marine Corps Commander Marine Corps Base Quantico	9/12/2017	Kristeen Gaffney Action Associate Director Office of Federal Facilities and Site Assessment U.S. Environmental Protection Agency, Region III	9/21/2017
Remedial Action Completion Report for Site 99 - Quantico Embayment	Site 99	Quantico Embayment	J.M. Murray Colonel, U.S. Marine Corps Commander Marine Corps Base Quantico	2/12/2018	Steven Hirsh Associate Director Office of Federal Facilities Remediation and Site Assessment Hazardous Site Cleanup Division U.S. Environmental Protection Agency Region III	3/30/2018
Remedial Action Completion Report for Site 100 - Chopawamsic Creek	Site 100	Chopawamsic Creek	J.M. Murray Colonel, U.S. Marine Corps Commander Marine Corps Base Quantico	3/15/2018	Steven Hirsh Associate Director Office of Federal Facilities Remediation and Site Assessment Hazardous Site Cleanup Division U.S. Environmental Protection Agency Region III	3/30/2018

Appendix J
Environmental Restoration
Program Figures

